

JPRS 84540

14 October 1983

USSR Report

ECONOMIC AFFAIRS

No. 1063

EKO: ECONOMICS AND ORGANIZATION
OF INDUSTRIAL PRODUCTION

No. 6, June 1983

FBIS FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service (NTIS), Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semimonthly by the NTIS, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

Soviet books and journal articles displaying a copyright notice are reproduced and sold by NTIS with permission of the copyright agency of the Soviet Union. Permission for further reproduction must be obtained from copyright owner.

14 October 1983

USSR REPORT ECONOMIC AFFAIRS

No. 1063

EKO: ECONOMICS AND ORGANIZATION OF INDUSTRIAL PRODUCTION

No. 6, June 1983

Except where indicated otherwise in the table of contents the following is a complete translation of the Russian-language monthly journal EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA published in Novosibirsk.

CONTENTS

Association Director Interviewed On Planning, Product Changes (pp 3-14) (N. P. Belous).....	1
Qualitative Approach To Data Processing Stressed Over Quantitative (pp 15-25) (L. G. Golub).....	10
Author Urges Informed, Less Time-Consuming Approach To Conferences & Meetings (pp 26-33).....	18
Book Urges More Structured Approach To Conferences & Meetings (pp 34-52) (B. N. Volgin).....	24
Benefits Of Using Fuel Additives Explored (pp 53-62) (M. O. Lerner).....	39
Need For Expanding Role of Evening, Correspondence Courses Viewed (pp 63-98).....	46
Benefits Of, Obstacles To, Evening & Correspondence Courses (pp 64-80) (S. F. Minakova).....	47
Evening, Correspondence Courses Help Fill Gaps In Full-Time Educational System (pp 80-91) (I. G. Feenik).....	56

Continued Evening & Correspondence Coursework Requires Financial Support (pp 96098) (A. G. Yur'yev).....	64
Charts Detail Increasing Shift To Evening, Correspondence Courses (pp 96-98).....	68
* Gastev And The Science Of Labor (pp 99-110) (D. A. Bedriy, E. B. Koritfkiy, R. Kh. Borisob and A. I. Kravchenko)	
Selections From Gastev's Theses Published (pp 110-112).....	71
Principles of Cell Biology As Model For Economy (pp 113-126) (R. I. Salganik).....	74
Need To Establish Commission To Eliminate Water Pollution (pp 127-134) (Yu. P. Velichenko).....	83
Readers Respond To Article On Urban Transportation Systems (pp 135-139) (Yu. N. Lachinov).....	89
Local, Central Planning Bodies Need To Coordinate Efforts (pp 140-141) (R. L. Sniper).....	94
* Forms of Wages In U. S. Machine Building (pp 143-158)	
Industrialized Countries' Technological Progress Accompanied By Growing Consumption of Raw Materials (pp 159-165) (V. Yu. Suchkover).....	96
Book On Problems Of Western Management Criticized (pp 165-172) (Yu. P. Voronov).....	102
Daily Allocations Of Worktime Urged (pp 173-177) (V. V. Fedotov).....	109
* How To Become A Bureaucrat (pp 178-186) (O. Kratov)	
Guide To Self-Rating On Attribute Of 'Decisiveness' (pp 187-189) (V. Rosachakhovskiy).....	113
(Articles Marked With Asterisks Not Translated)	

ASSOCIATION DIRECTOR INTERVIEWED ON PLANNING, PRODUCT CHANGES

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian
No 6, Jun 83 (signed to press 29 April 1983) pp 3-14

[Interview with N. P. Belous, general director of the Ukrelektromash Association, by L. Shcherbakova (Kharkov): "The Quality of Plans and Operation of the Enterprise"]

[Text] The November (1982) Plenum of the CPSU Central Committee approved the unchanging party course toward increasing production efficiency and its intensification. In this connection it is very important to organize planning that corresponds to the tasks of the day. The main thing now, as the secretary of the CPSU Central Committee, Comrade Yu. V. Andropov, said in his speech at the Plenum is "To accelerate the work for improvement of the entire sphere of management of the economy--administration, planning and the economic mechanism."

In the interview presented here concerning the problems of planning at the level of the enterprise the general director of the Ukrelektromash Association, honored machine builder of the Ukrainian SSR, N. P. Belous, shares his thoughts.

The Ukrelektromash Association specializes in the production of asynchronous electric engines with capacities from 0.25 to 100 kilowatts, which are delivered to all the republics of the country for enterprises of many branches of industry. A typical feature of the items that are produced is the large number of kinds of electric engines, which amount to tens of thousands of variants. The ways the asynchronous electric engines are made are determined by the multivariant combination of parts and assembly units which are distinguished from one another by their form, materials, sizes, technical requirements for manufacture and so forth. Although the overall list of products is relatively small (about 100 kinds), the possible number of combinations can be astronomical.

The products of the association are exported to 32 countries of the world. Among them are Great Britain, Italy, the FRG and others.

The Ukrelektromash Association includes 3 plants and a special design bureau. The head enterprise is the Kharkov electrical equipment plant (KhELZ) which recently celebrated its 50th anniversary. The volume of output of products in

the association exceeds 2.4 million electric engines a year, and 84 percent are products with the Emblem of Quality, including at the head plant of the association--85.9 percent, at the Poltava plant--78.4 percent, and at the Dnepropetrovsk plant--93.5 percent.

N. P. Belous has been in charge of the association for about 6 years. Before that he traveled the paths from master to director of the Poltava electrical mechanics plant, Elektromotor. It is precisely in these last years that the association has achieved great successes and become the leader of the Soyuzelektromash All-Union Production Association.

[Question] At the November (1982) Plenum of the CPSU Central Committee it was emphasized that the branches must work to satisfy the public demand. One of the main indicators related to this is the fulfillment of commitments for deliveries in an assortment that corresponds to the agreements that have been concluded. How is this requirement interpreted in the activity of your association?

[Answer] We have placed this indicator at the basis of planning within the association and we can no longer produce products in the wrong assortment since a rigid normative has been established: the plan for deliveries can be fulfilled by no less than 98 percent. For underfulfillment it is the entire collective and not just the administrative personnel who are deprived of the progressive wages. And they are severely punished for both underdeliveries and overdeliveries.

We have been working in this direction for about 3 years and we immediately felt not only the economic, but also the purely psychological advantage: there were no more threatening telegrams and it was not necessary to make explanations regarding interruptions in deliveries. There is also an advantage from this for the national economy.

How have we specifically organized the operational control of production? The entire collective, from the worker to the general director, works under one document--the plan-schedule, which includes all stages: the delivery of materials, the manufacture of parts and assembly units, the output of final items. The plan-schedules (network schedules) are drawn up in such a way as to reduce to a minimum the influence of the irregularity of deliveries from one enterprise or another. This has made it possible for us to sharply improve the indicators of rhythmic production. Thus while the output of products in various 10-day periods in 1980 were 12.1, 32.5 and 55.4 percent, in 1982 they were 28.1, 34.5 and 37.4 percent.

We arrange the plan schedule in such a way that the enterprise (shop) produces only one kind of product throughout the course of the month. In keeping with the technology, concrete assignments are given to the shops for the month. For example, in the morning on the selector telephone the shop chief says: today 32 lines will be completed. What does this mean? This means that there are orders from suppliers which, according to the plan-schedule, the shop must fulfill today. Let us say that of the 32 lines only 28 are fulfilled. Then the shop chief must indicate why 4 were not fulfilled and what must be done in order to catch up with the plan-schedule. Of course, production is a complicated

matter and everything does not always go as planned; there can be, for example, interruptions in supply. This breaks the rhythm. But in a monthly plan-schedule we always include everything.

The warehouse for prepared items does not accept products that are not needed in the shop today. They are very careful about this. We are severely chastised for attempts to store such products in our shop. Shop workers are deprived of bonuses for this. And why not? For the shop would have used the material and not produced the product necessary for the plant. We have even developed special provisions for eliminating bonuses in these cases. The plan-schedule has made it possible to "elucidate" each service, each person who is responsible for such disruptions.

We did not begin to adhere to the plan-schedules immediately. Some services were even glad to have disorganization and disorder. For example, our material and technical supply administration operated in this way. They said: we have wire, we have rolled steel, but workers of the material and technical supply administration are not responsible for the assortment. But with the introduction of network schedules they must provide only those materials which are needed for production during a particular month. It was necessary to sharply change work methods.

In my opinion there is a reliable way of convincing a person of the need for innovations: to show him how they work. In our association the plan-schedules were introduced first at the Poltava plant. We traveled there with shop chiefs and then with assembly workers and stamping machine workers. The people, as it were, saw with their own eyes and became convinced of the advantages of working in the new way.

/Question/ But this is all within the association. How about external links? Do you have many of them?

/Answer/ Yes, quite a few. Although the electric engine contains only about 100 parts and assembly units, the assortment of materials that are used amounts to more than 2,500 kinds. Among the most important materials and batching items are: rolled dynamo steel, bulk steel, silumin, iron, glazed wire, various kinds of electric insulation materials, bearings, relays, magnetic starters and so forth. The supply of materials and batching items is provided by about 350 suppliers.

In practice enterprises of all union republics deliver materials and batching items to the association. Among them are such large ones as the Cherepovets metallurgical plant (RSFSR), the Karaganda metallurgical combine, Zaporozhstal', the Zhdanov Plant imeni Il'ich, Yuzhkabel' (Ukrainian SSR), and cable plants of Gomel (Belorussian SSR), Perm and Podolsk (RSFSR) and Tskhinvali (Georgia). Electric insulating materials are delivered by enterprises located in Moscow, Naro-Fominsk (RSFSR) and Petropavlovsk (Kazakhstan); aluminum--Tursun-zade (Tajikistan) and others.

Before the introduction of the ASUP at enterprises of the association attempts were made to explain all disruptions of the rhythmic output of products by failure to meet deadlines for the delivery of materials. Introducing the ASUP

and conducting the necessary organizational measures made it possible to plan in interconnection the work of all subdivisions of the enterprise and to regulate the interconnections with certain of our suppliers. As a result, for example, the Cherepovets metallurgical plant now provides regular deliveries. It dispatches products, as a rule, in the first half of the current month and all the steel that is dispatched in that month goes for producing electric engines. In 1982 there was a sharp improvement in the delivery of bulk steel by the Makeyevka metallurgical plant. Additionally, the Karaganda metallurgical combine delivers steel only at the end of the month and it is not processed until the next month. Cable plants of Moscow and Pskov do not deliver glazed wire regularly. The situation is unsatisfactory with respect to the delivery of bearings from Vologda and Tomsk, and magnetic starters from Mednogorsk.

Delay in the deliveries of individual kinds of materials and batching items creates certain difficulties in providing for rhythmic operation of the enterprises and leads to additional expenditures. It also seems unjustified to me to use various suppliers for delivering the same products, for example glazed wire, electric insulation materials and other materials. The planning organizations should listen to the opinion of the consumers of these products.

[Question] And what changes have taken place in the long-range and current planning? How does the association experience planning from above?

[Answer] The decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979, "On Improving Planning and Strengthening the Effect of the Economic Mechanism on Increasing the Efficiency of Production and the Quality of Work," envisions a whole number of measures which should raise the level of planning. It is intended to increase the role of long-range plans, to introduce a system of scientifically substantiated technical and economic norms and normatives, and the ministries and departments are to notify the associations and enterprises of plans in terms of all indicators (including material and technical resources) no later than one and a half months before the beginning of the planning period, and they are to provide for stability of annual and quarterly plans.

For me as a manager it is important to fulfill the annual and five-year plan with a running total, when the evaluation of the activity of the enterprise and also the provision of material incentives are carried out quarterly with a running total from the beginning of the year. With each evaluation we will have freedom for maneuvering. If as of today, because of reconstruction or some other factor, the plant has not fulfilled, for example, the quarterly plan and the plan from the beginning of the year, the bonus for this quarter, of course, will not be paid. But when the problems have been solved the workers will have the opportunity to make up for what has been lost previously. It has become much easier to work with the collective and to arrange for it to operate well. Recently, for example, one of the shops of the KhELZ failed to fulfill the plan because of a lack of batching items. Engineering and technical personnel and employees did not receive a bonus during that quarter, but within the next 5 months they made up for what had been lost.

It would seem that after the publication of the decree the central planning agencies, supply agencies and branch organizations (in our case, Soyuzglavelektro) will be reoriented and will give us a bright future. But even up to the present time we do not have a clear picture of the five-year plan as a whole. The year 1983 is in progress and we can not say what awaits us.

In my opinion, it is necessary to have a clear-cut system of accounting and control over the needs on the scale of the country. This should be in the hands of Soyuzglavelektro. So far we do not have such a system, and we management workers are working blindly, on intuition. We think that still the time will come when it will be necessary to produce a particular kind of product, and therefore we are beginning to prepare resources. As a rule, this is the way it happens.

There are still shortcomings in current planning. As before, planning indicators, material and technical supply and individual financial issues are not balanced. The plans are unstable and they change during the course of the year. Now, for example, at the Yaroslav plant of our all-union production association they are removing from production engines for the wood processing industry. They are arbitrarily transferring the output of these engines to the Dnepropetrovsk plant of our association. And they do not pay attention to the fact that this machine is completely new for us and that lengthy preparation for production is needed.

What is important for the manager in situations like this? In my opinion, he should be able to protect his collective. For what kind of chain appears here? Let us assume that an unrealistic plan has been assigned to a shop. The shop chief sees that he will not fulfill it in any case whether he works at full force or half heartedly. And every worker understands this. The labor attitude deteriorates in the collective, it is difficult to improve it later, and the responsibility for the fulfillment of the state plan becomes ineffective.

[Question] It is known that your association participates in the implementation of the program for the changeover to the production of the AI--an asynchronic engine developed within the framework of Interelektro. It is being criticized by the USSR State Committee for Science and Technology. How are you planning and organizing the implementation of this interbranch program?

[Answer] Indeed, our association is participating in this program. Enterprises and organizations of all the CEMA countries, including a large number of Soviet associations, scientific research institutes and design bureaus are cooperating within its framework.

The implementation of this comprehensive international program began as early as 1973 with the preparation of the agreement concerning scientific and technical cooperation in the development and assimilation of a unified standardized series of asynchronic electric engines. In 1974 a combined scientific and technical council was organized for asynchronic engines, which coordinates scientific research and design-technological work, which is to be carried out by a combined (participating countries) design and technological bureau.

The development of electric engines of the AI series, which correspond to the level of world electrical machine building of the year 2000, which was planned by the decree of the USSR State Committee for Science and Technology and the USSR Gosplan, will provide for improvement of all the main parameters as compared to the engines of the 4A series, which we are now producing: the noise will be reduced by 10 decibels, the energy parameters will be increased, the weight of the engines will decrease by 8-10 percent, the sizes will decrease, the period of repair-free operation will increase to 0.95 for 10,000 hours, the time period before capital repair will increase from 8 to 20 years, the precision class of the items will increase, and the degree of protection will increase. The annual economic effect will amount to more than 40 million rubles.

Unfortunately, the organization of the output of the AI is an example of how difficult interbranch programs are for us. For this electric engine it is necessary to have new insulation, bearings, glazed wire, chemical materials and other technology for processing. A number of ministries must engage in solving these problems. And it is their activity that is not joined together at certain times.

What has been done to organize the work? The State Committee for Science and Technology has issued an order for the changeover to producing the AI. In our opinion, it should be followed by a document indicating the specific dates and individuals to perform the work. For the final deadline is not far away--1984. But even today nobody is handling individual problems. Nobody is preparing for the production of the bearings and certain kinds of steel. And without this we will not be able to obtain the same energy capacity in the smaller machines.

We have started going through hell. We ourselves are running to the various authorities because we see that otherwise the matter will not get off the mark. Within the framework of our ministry we have even created an operations group headed by the deputy minister, which is trouble shooting for the AI. And we are straightening things out from below. But this is a low level of organization! It is necessary to increase the discipline and responsibility at the level of the country's planning agencies, the Gosplan and the State Committee for Science and Technology.

[Question] And to what degree are you yourself ready for changing over to the AI?

[Answer] What have we done? The special design bureau has developed design documentation for experimental models of the electric engines of the AI series with rotation axle heights of 71, 80, 90 and 100 millimeters, and the AI-80 electric engines have already been manufactured. Experimental models have been tested and submitted to the interdepartmental commission for experimental design developments. The AI-71-100 electric engines are the largest in the entire series. Their annual output will amount to several million. They will be used in various areas of the national economy, including agriculture, machine tool building, construction, light industry and so forth.

For the first time in the practice of special design bureaus, along with experimental design work and preparing for the production of the main kinds of electric engines, they are developing modifications and preparing them for production. If we had batching items we could change over to the output of these engines a year or a year and a half earlier than the deadline set by the State Committee for Science and Technology, by removing uncompetitive, outdated products.

I should like to take note of the positive significance of the experiment for introducing the new system of planning, financing and economic stimulation of the work on new technical equipment that has been conducted in our ministry. I will speak of our own all-union production association. Previously enterprises were unwilling to change over to the output of new products since this involved many troubles and did not produce a real advantage. The enterprise that introduced the new products generally lost. But now we have received increments for quality and for the effectiveness of the products. And all this is included on the books of the enterprise. Hence there are both bonuses and deductions for social, cultural and domestic expenditures. The majority of workers and managers are motivated to change over to the AI engine where they have understood that the output of an effective new product in the final analysis means a good economic situation for the enterprise, and this is advantageous for the entire collective. Even so there are still managers who are not meeting the schedules for changing over to the new electric engines that have been developed by the ministry and the all-union production association.

[Question] Nikolay Petrovich, a changeover to producing new products always entails technical re-equipment of the enterprise. How are you solving this problem in your association?

[Answer] The course toward intensification of production presupposes a limitation on new construction. Because of this, technical re-equipment becomes especially important. And the manager who understands this has a great advantage. For if an enterprise does not carry out construction it can become stagnant and outdated. I think that there is only one solution, especially in such old cities as Kharkov--technical re-equipment.

What are we doing at our association in this area? Under the leadership of the head engineer we have created a special group that examines such issues in advance. Of course, we do not always manage to obtain the equipment we want, including imported equipment. And here mistakes in purchases are especially costly to the national economy.

People who handle procurement abroad must know exactly the situation in the branch and have an idea of the world level in this area. For example, I am still offended by the fact that with the changeover to the AI we are losing equipment which was not properly developed 15 years ago. The fact is that when we changed over to producing engines of the 4th series in 1971, they purchased abroad permanent lines that cannot be readjusted. And it would have been possible to purchase adaptable lines with a set of replacement equipment. Then we could have changed over to the new type of engine using the capacities of our own instrument shop. It would not have been necessary to purchase more equipment or to replace it. Of course the advantage on the scale of the country would have been immense.

[Question] What do you see as the solution?

[Answer] In my opinion each enterprise should have a strong staff for technical re-equipment under the head engineer which announces the requirements for future equipment. And the ministry and Stankoimport should guard our interests and announce these requirements to the manufacturing firm, and let them meet our conditions.

[Question] The ministry and the enterprise . . . what kind of relations do they have? To what degree is the ministry staff responsible for its decisions?

[Answer] About 10 years ago the sense of responsibility of people working on the ministry staff was greater, in my opinion. They tried to experience the situation at the enterprise. True, there were many fewer of them then than now. And a good deal depends on one person at that level. Let us assume that a sympathetic woman named Valya or Tanya is handling the distribution of batching items. But she does not understand that if she does not meet her commitments on time and does not distribute, for example, some wire, coilers will stand idle at the enterprise, and after them--the assembly workers as well.

The ministry must react quickly to the demands of the enterprises. At one time, for example, we were terribly let down by Moskabel' which failed to make its deliveries. And it is annoying that the ministry, knowing the situation in Moskabel' ahead of time, did not take any measures. And what can the enterprise do? We cannot make our product from clay, and this means that we wander around and beat our heads against the wall. This situation can be understood when speaking about other ministries, but if something is disrupted because of an enterprise of our own ministry, it should promptly make the necessary decisions. And frequently it does not do this. Only the enterprise is responsible for the specific state of affairs.

Who knows better than the all-union production association, which is responsible for all reports, how things are going at a given time at each enterprise? And why then can its employees not redistribute resources rapidly? Why are there no batching items of one kind at one enterprise and at another there are mountains of above-normative stocks?

Now the material incentives of workers of the main board and the all-union production association depend on the results of the work of the main board as a whole. If it depended directly on the work of the enterprises for which the worker of the main board is responsible the situation could only improve.

[Question] One of the participants in the meeting of the "round table" discussion, "The Enterprise, A New Stage of Management," (see EKO, 1981, No 1) suggested breaking down the earnings of the staffs of the ministries and departments into two parts: constant and variable, which must be earned by fulfilling the corresponding commitments in the established time periods. How do you, Nikolay Petrovich, feel about this suggestion?

[Answer] I think that it is a good and timely suggestion. The main thing is to be able to control this process!

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

QUALITATIVE APPROACH TO DATA PROCESSING STRESSED OVER QUANTITATIVE

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian
No 6, June 83 (signed to press 29 April 1983) pp 15-25

[Article by L. G. Golub, candidate of technical sciences, Estonian SSR
Scientific Research Institute of Construction (Tallinn): "Help Electronic
Computers!"]

[Text] Several years ago among many people the idea of automated control on the basis of electronic computers caught on like fire. At that time it seemed that an automated control system was the best and quickest way out of the situation that had been created, and the situation was not an easy one. Somehow we suddenly became aware that control was lagging seriously behind the requirements of life that had taken form during the process of the growth of the scale of our national economy and its gigantic complication. A sharp increase in the "cost" of an administrative mistake became more and more intolerable, but the mistakes did not disappear, and the number of them did not decrease. There are more and more "white collar workers" at the enterprises, but the complaints about the administrators have increased. A hasty calculation, technology that is not well thought out, and incorrectly drawn up schedules for related workers have lead to idle time of people and technical equipment, a deterioration of the quality of the items, incomplete work and reworking of products that have just been produced.

Frequently, in order to draw up an order, an estimate, an application or another document, the engineer has leafed through dozens of normative reference books and then written out a mountain of figures on the appropriate forms. And during this time at the construction site or in the shop there was nobody to show the worker how to perform the job best, what to devote attention to or how to organize labor in the brigade.

Computer centers today produce dozens of kilograms of documents that are beautifully printed on electronic computers. In bookkeeping offices wages are paid on the basis of them and materials are written off, and in the personnel division they follow the movement of the labor force. But in planning, production, technical and technological divisions the machine documents do not always have the rights of full citizenship. So far there have been no essential changes in the sphere of production administration.

Many production workers become disenchanted with the possibilities of effective utilization of electronic computers--they do not see the computer as their assistant. Those same managers who several years ago "pushed through" automated control systems and proved in all cases that they could not live without electronic computers today go for months without seeing the workers of the computer center and they almost do not work with machine documents.

Why?

They speak about the psychological barrier, about the impossibility of utilizing electronic computers in those productions where disorder reigns, especially in planning, about the fact that for the electronic computers there are no grass plotters, technical equipment for dialogue between man and machine, information registers or other "peripheral" items. Many point out the shortcomings of modern economic and mathematical models. All this is true, but there are also other factors.

Two Pictures From the Life of An Automated Control System

What occupies almost all the time of the workers of divisions, bureaus and groups at enterprises and construction sites, in small offices and in large main boards? As a rule, they are making calculations within the limits of the four functions of arithmetic.

"Ivan Ivanovich, Monday is the last day for submitting an order for fasteners. Please put everything aside and start to work on the order immediately . . ."

"Mariya Petrovna, it is necessary to recalculate the cost of the work that has actually been done. Here are the volumes and get the prices from the library. The calculation must be submitted by the fifth . . ."

"Volodya, make a calculation for the installation of this block--the blueprints are in the technical division. Tomorrow you can coordinate it in the labor division . . ."

Nothing could be simpler than to feed into the computer the normatives for the expenditure of fasteners, the cost of a unit of work, the time norms and the rates for performing individual operations, set the machine for the necessary volumes, and that is all. With the speed of hundreds of thousands of operations per second, at the computer center they figure out the order, the estimate and the costing. Moreover--they print it on the required form and it will not be necessary to look for the standard form from the suppliers or the labor group member or convince Nadya to print the document out of sequence. Finally it is not necessary to sit and check to make sure whether Nadya printed all the figures correctly and that they did not receive 100 tons of bolts instead of 10 tons. It becomes possible to actually become an engineer who thinks and creates on the job. Then the assignments will appear different.

"Ivan Ivanovich, can you not reduce the expenditure of fasteners per ton of items? Perhaps you will be able to change the design of the fastener? Or perhaps we should go to welding? Get in touch with the scientific research institute. Within a couple of weeks prepare documentation for the technical council."

"Mariya Petrovna, for some reason the production volume has dropped in the third section. Who can be holding them up? Look through the technology and analyze how things are with the related workers?"

"Volodya, Petrov's brigade is not meeting the plan for physical output. Look at the organization of the flow. It might be necessary to call in the specialists in scientific organization of labor?"

Automation of the majority of routine administration jobs has become almost within reach. It would seem that there is not much more to do before it becomes a reality.

Computer centers have appeared at dozens, hundreds and then even thousands of enterprises. At first they were equipped with electronic computers of the Minsk type and then more powerful computers of a unified series appeared. Along with them came specialists of whom nobody had ever heard before--programmers, operators, systems technicians, electronics experts, and so forth. Today many VUZ's and tekhnikums train these specialists.

They have begun to enter norms, codifiers and reference information into the long-term memory of the machines on magnetic tapes and disks. For planning the need for fasteners they entered all the technological and economic characteristics of each bolt, screw and nut. In order to account for personnel and calculate wages they enter all the report data of each worker: salary, number of children, number of years left before pension, and the amount of present credit that is being paid off . . .

And then a long tape of a document printed on an electronic computer comes into the computer center. Ivan Ivanovich takes the order drawn up by the intelligent machine and checks it. First the arithmetic--everything is correct, and then the selection of norms--also correct. But the result is still unusual. It did not order enough bolts regardless of how one calculates it. Although according to the calculation everything is correct, from intuition and experience it seems that there are not enough. Ivan Ivanovich goes to his boss, discusses his doubts and draws conclusions. The carryover supply has been taken according to the norm, but by the end of the year it is always less, since the plan will be attacked. That is one thing. According to the plan, not very many items of group A were envisioned, but at the home enterprise, which also produces them, things are not going so well, and it is not impossible that the ministry will again request that they work harder and produce more of them, and then there will not be enough fasteners. This is the second thing. There are also a third factor and a fourth factor and so forth. Here is the conclusion: the calculation is not bad and we can accept it as a basis and then adjust it. Just have Nadya come in on Saturday in order to retype the new order.

Of course, if all of these factors were taken into account ahead of time one would have a good calculation. But one cannot foresee everything ahead of time! And it gradually became clear that it is not at all simple to transfer even the simplest administrative decisions to electronic computers. It is necessary to have human analysis which with traditional calculations is customary and simple, but cannot always be made in conjunction with electronic computers--too much information passes through the mind.

Even more than the automation of routine processes, the production workers were attracted by the possibility of rapidly finding optimal decisions in complicated situations. Every day the manager of the construction trust and his assistants have to solve real puzzles. For example, how to divide 10 cranes among 20 construction sites in such a way that these cranes will be available to those who really need them first?

"But there are no special problems here!" announced the mathematicians who had been invited in, and within 2 months they submitted a report entitled, "Formulation of the Problem of Optimal Distribution of Mechanisms Within the Trust." And although it included only symbols, and the further they went the more complicated they became, the manager agreed to this report, concluded an agreement with the institute and began to wait until he could rely on electronic computers. After a certain amount of time the mathematicians requested real data and soon came up with a detailed work plan for several months in advance: on which facility and when which crane would begin, how much time it would work there, where it would go then. Everything looked beautiful and clear, and the main thing, as the mathematicians say, was that it was optimal. The manager approved the schedule and called upon everyone to abide by it.

But soon the head mechanic came to him.

"According to the computer schedule Sidorov's crane should be sent to the school, but there the ground is hard, the excavator cannot handle it and within 2 days it breaks down. This ground can only be used for a residential building. Kozlov who is now working there is going on vacation, and his assistant has not been working very long. While Kozlov is on vacation it is better to send their machine to the new shop to be operated by someone who is experienced--they have a greater volume and more maneuverability, it will be easier for the assistant to gain experience, and he will be supervised."

The manager agreed to the changes and requested that the mathematicians take the new aspects into account, especially the repair factor.

"Here it is necessary to apply probability methods," said the mathematicians. "Let us gather statistics about breakdowns, process them and take them into account."

While they were gathering and processing the statistical data a new chief was hired for the repair base. He arranged things in such a way that the mechanisms began to break down less frequently. It was necessary to gather statistics again. And by that time the machine operators had been included in the brigade of construction workers. This changed their attitude toward their work and again the statistical base began to change. The mathematicians had to reject probability methods, but still they managed to take other factors into account.

Corrections were made on the new calculation from the very beginning.

"But why did they not plan to send a crane for the movie theater?"

"If we begin with the movie theater the trust's profit will be less."

"But we made a socialist commitment: by the holiday we must present a movie to residents of the microrayon. But the movie theater does not provide us with profit, and the deadline is important!"

Again the mathematicians made adjustments to the calculations. And again the construction workers were not completely satisfied with them. Unexpectedly a situation arose in which it was necessary to deal primarily with the work front of the electricians. If the cables were not laid rapidly they would be taken to another project, and it would not be possible to release the plant for adjustment according to the plan.

In the end the mathematicians began to regard the problem in another way. Production administration, as it turned out, is a much more difficult matter than control of the most complicated technical objects. There are too many unformalized factors in it.

And There Will Be A Hundredfold Reward

About 10 years ago specialists in automated control systems sincerely promised mountains of gold to production workers. It seemed that the day was already near when every plant engineer would begin to work creatively and would begin to think not about making up for yesterday's shortcomings, but about the future, would not shout into the telephone until he was hoarse, but would analyze the work plans compiled on the electronic computer and select the best from them. Production workers expected from the automated control system a sharp reduction in labor-intensive administrative work and optimal decisions regarding production administration.

In many cases, especially with a unique kind of production, these goals are still difficult to achieve. Electronic computers require a very large amount of information, and it is frequently prepared manually. What seems at first glance to be a small change in the input to an electronic computer causes great labor expenditures. A mistake which is relatively easy to discover when a person is doing ordinary calculations, is sometimes revealed too late when electronic computers are used. Many decisions which a human being makes almost intuitively cannot be worked out on the machine.

Machine modeling is still much poorer than real life. That which seemed simple and clear 10 years ago has turned out to be fairly complicated as experience has been accumulated. Many recall that the cavalry attack did not lead to success. It demonstrated our capabilities, disclosed problems and made it possible to evaluate the situation correctly. A long-term siege seems much more realistic. It is necessary to prepare for slow, labor-intensive and complicated work. There is no other way. Stable and prolonged progress in the sphere of production administration is possible only on the basis of the utilization of electronic computers and the creation of automated control systems.

There are many successes in the utilization of electronic computers: automated control systems at enterprises with series production, long-range planning of the branches, schedules for constructing extremely complicated facilities for several years in advance, and so forth. These successes inspire hope and show the correctness of the path that has been chosen, and their analysis makes it possible to discover conditions whose fulfillment will lead to the desired result. Perhaps the main one of them is the position of the first manager, his understanding of the role and significance of electronic computers and automated control systems in production, his competence and his personal participation, as it were, in the system of feedback. In almost all successful automated control systems the "principle of the first manager" has been in evidence.

But the expenses have also been obvious. Frequently in computer centers they carry out an electronic computer ritual whose participants, really believing in the power of the computer and working very conscientiously, end up in a difficult situation. In order to carry out the plans set for them they produce an immense quantity of calculations which turn out to be useless. These undermine their belief in the capabilities of the computers and strengthen the position of those who consider electronic computers and automated control systems to be nothing more than a fad. They are convinced that the fad will quickly pass and production administration will return to its "proper circles." They think that next year and 10 years from now "pushers" will be sent to acquire resources that are in short supply, chiefs of shops and services will argue for hours at operations meetings, rank-and-file workers, senior workers and even leading engineers will write kilometer-long orders, and managers of all ranks will be swallowing Valium at the end of the quarter.

The time has come not to strive for a large quantity of problems, subsystems and systems to be introduced, not to increase the number of enterprises and industries that are "embraced" by automated control systems, but to increase the actual utilization of what has already been created and formally introduced. Instead of 5 new problems, it is much more useful to understand 1 that has already been created.

And here new problems arise. For in the plan the old problem has already passed away, and the money on its development and introduction has been spent. Those who plan new technical equipment think that what is done is done. Resources can be allotted for new problems and new facilities for introduction. As a rule, the effectiveness has been fully calculated even in the first stage. And so it appears that there is no point in increasing the effectiveness. This exacerbates the disease. Mistakes in planning that are made in the first stages of the creation of an automated control system and a perfunctory approach "from above" are manifested even today and they hold things back. It is necessary to remove this blockage that has existed for many years. The creation of an automated control system must be planned not for the report, but for the actual effect.

Today automated control systems are being created by scientific research and planning institutes, information computer centers, technological organizations and VUZ's. Tasks with the same content are carried out in one ministry by a

scientific research institute and in another, by a computer center. The boundary between scientific and planning development has been erased. Naturally when creating automated control systems it is frequently difficult to distinguish where research ends and where planning begins. But purely planning work, carried out according to clear-cut methods and instructions, has one cost and time period for execution, but it is quite a different matter when parallel with planning there is scientific research, whose final results are not known until the end.

Immense amounts of money have been spent on creating automated control systems. The facilities and the technical equipment itself are costly, and expenditures on programming are great. But the core of the automated control system--the formulation of the problems--is frequently provided very quickly and inexpensively. This ends up in losses--complex programs are created with which electronic computers calculate plans, schedules, and orders that are unsuitable for practice because of defects in the formulation of the problem. Herein lies another problem.

Practically every organization that develops an automated control system has highly skilled mathematicians who are experts in algorithms and and programmers. If the task is clearly formulated for them they are able to resolve it and create a program for the electronic computer. There are also enough ordinary specialists who know the object of administration--the shop, the service or the plant. But mathematicians and production workers speak in different languages: that which is obvious to the production worker is far from obvious to the mathematician, and vice versa. Omissions, ambiguity and imprecision on the part of the production worker when formulating the task impede its realization on the electronic computer.

The plant or the factory is a unified whole, a living organism. To single out tasks in production administration is always conventional. "Only a corpse has parts, an organism lives." The person who formulates the task must make the part live. Herein lies his art. First of all this is the art of simplification. Most frequently the boundary between a justified simplification and oversimplification is apparent only at the end of the job, when the electronic computer begins to solve the problem. But then it is already difficult to rectify the mistake. Sometimes it is easier to start from the beginning.

It is easier to find a solution to this problem in a collective that is capable of solving problems at a high level and planning the creation of standard decisions which will then serve as a basis for many automated control systems. But it is not enough to plan standard decisions--it is necessary to create conditions for their development.

And, finally, a couple of words about introduction. Frequently one has occasion to read how difficult it is to introduce a new machine tool or fitting. Man has become accustomed to working in the old way and it turns out to be difficult to teach him the new nature of labor, even if it is physical labor. It is much more complicated when the nature of intellectual labor changes. But not enough pressure is being exerted from above. When people do not desire to use machine calculations they can always find shortcomings in them. It is necessary for

man to feel that the electronic computer is not only his assistant, but also his friend, who now needs help.

In the first stages of the introduction of automated control systems there is frequently an increase in the volume of work for the person who utilizes the results of the machine calculation. And in general automated control systems do not always directly facilitate labor, even though they make it more efficient. It is necessary to speak about this openly, not to hide anything, and to prepare the people.

Therefore we should like it very much if at enterprises that have automated control systems above the desk of each manager and rank-and-file worker they would write: "Help the electronic computer! It is your assistant and friend, and it needs support now."

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

AUTHOR URGES INFORMED, LESS TIME-CONSUMING APPROACH TO CONFERENCES AND MEETINGS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian
No 6, Jun 83 (signed to press 29 April 1983) pp 26-3

[Interview with B. N. Volgin, author, by D. Shpil'foygel': "With the Author
of the Book"]

[Text] "How to Chair a Meeting . . ." This was the title of an article about the book by B. N. Volgin, "Business Conferences," that appeared in EKO as early as 1971 (No 5). The problem of conducting meetings efficiently had not disappeared from the agenda, and a new, third edition of this book (1981) has been distributed fairly rapidly. The reason is not only the large demand for this kind of literature and not only the small edition (50,000 copies), but also the quality of the book itself. It was awarded the certificate of the all-union competition which is held annually by the board of the all-union Znaniye society.

First let us introduce the author to the readers. Boris Nilolayevich Volgin, candidate of technical sciences, docent, head of the department for production administration of the Institute for Increasing the Qualifications of Management Workers and Specialists of the Ministry of the Machine Tool Industry, has scientific works on the theory of the reliability of technical systems and on production administration, and he regularly writes for the press. He has written the books: "Youth In Science" (Znaniye, 1971), "Help the Telephone" (Svyaz, 1976) and "Business Conferences (Moskovskiy rabochiy, 1970, 1972, 1981; Valgus, 1975).

[Question] Boris Nikolayevich, your book is devoted to the role of business conferences in administration and to the best way to prepare and conduct them. Let us speak about the introduction of scientific recommendations concerning conferences. Why has the importance of making business conferences more efficient not decreased? Many facts show that we continue to have too many meetings, which last too long and which involve too many people . . .

[Answer] According to data of a questionnaire of 12 directors of machine tool building and instrument plants, which was conducted in May 1982, the picture looks like this: the average length of the working day of directors is 9 hours and 50 minutes, and the time they spend in meetings is 2 hours and 31 minutes.

The corresponding minimum values were 8.5 and 1.5 hours, and the maximum values --12 and 4.6 hours. These figures are typical, and I present them not as proof, but as an illustration of the situation that exists.

Ten years ago the working day of the director lasted an average of 11.5 hours, and he spent approximately 3.5 hours on conferences, so there has been progress. But still the urgency of the problem has not decreased and, perhaps, has even increased. It seems that this paradox can be explained, first, by the keen public awareness of the fact that we must not tolerate any losses, including losses of working time. As we know, this is related to the persistent need to change over to the basis of intensification.

Past years have been marked by increased qualifications of managers. And people want to work on a new level now. The contrast between what should be and what is and the dissatisfaction with the state of affairs--it seems to me that this is the second reason for the urgency of the problem of conferences.

[Question] But how do we explain the existence of this contrast? For we have long known about the unsatisfactory condition of the time resources of the manager, and it was not yesterday that we began to deal with increasing his qualifications . . .

[Answer] There is no simple answer to your question. In the first place, past years have disclosed the problem of psychological inertia. It has turned out that the introduction of innovations in organizations is a very complicated matter. It is no wonder that the science of administration is devoting more and more attention to these problems.

In the second place, business conferences are not included among the key factors in increasing the effectiveness of administration. Practice shows that it is impossible to make a conference maximally efficient, highly effective and so forth as long as there is no efficient organizational structure and information system, as long as document circulation is not smoothly arranged (and specialists think that at enterprises today documents go through certain calculations 10 times more than is necessary), as long as work planning and the schedule for the day are not smoothly arranged, and so forth.

[Question] Your idea can be illustrated from an article in our magazine. We wrote about the work experience of the Tiraspol sewing factory where a great deal of attention is devoted to dividing up functions and delegating authority (EKO, 1980, No 1), about the work experience under the conditions of an administrative information system based on an automated control system at one of the Novosibirsk enterprises (article by Yu. I. Tychkov, "Information Which Will Help the Manager," in No 5 for 1978 and materials from the discussion of this article in No 1 for 1980), about the work experience under the conditions of the administrative information system with the manual variant (article by G. P. Novikov in No 2 for 1980 and No 5 for 1982) and others. Everywhere they noted the coincidental improvement in the state of affairs with respect to conferences.

[Answer] The reader will find several of these examples in the book as well.

But let us return to the question. If one tries to improve the situation in one of the units without involving all the other levels of the hierarchy, this unit will be swimming against the current. Let us say that I, a shop chief, has introduced a schedule for conferences and am trying to adhere to it. And then the directorate sends instructions to conduct meetings for technical training in all subdivisions. And I am forced to hold this meeting for otherwise I will be a violator of discipline.

If you are guided by gross indicators concerning the production volume, there is nothing surprising in the fact that you are ordered to hold a meeting for this technical training, and when you report on it you rely on the number of people and the large number of speakers . . .

Another reason for the viability of the inefficient style of conferences is the poor development of questions of introducing scientific administration. The managers themselves did not begin to deal seriously with this problem until relatively recently when they became clearly aware of the complexity and importance of this occupation and its immense role in the modern society. It means a good deal to be a good manager. History can provide many examples where trained and brave warriors were defeated because of the lack of talent of the regimental commanders. And industrial commanders must be intelligent, talented, strong and educated people.

The scientific approach to problems that bother managers should be deepened, and it is no wonder that at 3 party congresses in a row and at the November (1982) Plenum of the CPSU Central Committee they discussed very pointedly the need for improving administration, for immense reserves lie in administration. Hence the requirements on managers, questions of selecting candidates for management positions and their training and retraining. The working conditions for managers and the structure of the expenditure of their working time are a mirror which reflects everything. It is even more important to deal with these conditions since there is a small percentage of older people among managers. The average working day of the manager, as usual, exceeds reasonable norms. Managers have a nonnormed working day, but there is a norm for exceeding the standard working day. This overtime, as registered in legal documents, should not exceed 120 hours a year or an average of 0.5 hours a day. But the actual amount of overtime reaches 2-2.5 hours a day. Everyone deals with his own administrative problems. Let us take a simple example--expenditures of time on conferences. Here is a picture you need: a comparison of the various branches, regions, enterprises in a city or even subdivisions of an enterprise will simply not do--special research is necessary.

[Question] It seems that this problem has gotten off the ground. It is known that in some places they have begun to take into account the expenditure of time on conferences . . .

[Answer] Moreover, there are enterprises, for example in Lvov and Novosibirsk, where the effectiveness of meetings is taken into account when awarding bonuses to managers. This is still being done in a primitive way: they look through

the minutes of the meetings and determine the issues that could have been resolved without a meeting. The existence of this practice shows that the manager comrade has sometimes hidden behind a meeting or has not displayed adequate competence in given cases. Let us say that during a quarter five of the issues that were discussed were thrown out. Then the coefficient of usefulness of the meetings is considered to be $5/6$ (25/30) and the quarterly bonus of the manager is multiplied by this coefficient. One might think that this is already something, but I am still far from thinking that this system is good for everyone. It is much better to have the check system which has been introduced in certain foreign countries. Its essence is that the manager receives a limit on conferences in man-hours. After each conference, in the presence of the participants, he fills out a form in the checkbook where he notes the number of man-hours that have been spent (the time multiplied by the number of participants) and submits it to the technical secretary. When the limit is reached there are no more conferences. This system places a limit on time expenditures in conferences and teaches people to call them only when there is a real need and to call in the minimum number of people--only those who are actually needed. We too could possibly change over to such a system at some time, but as for now, in order to determine the rigid normative for time expenditures on meetings it is necessary to learn first of all to calculate these expenditures.

The very idea of accounting for man-hours will draw attention to economizing on them and will put an end to thoughtless waste of valuable time.

Meetings are one of the instruments of administration that take the most time of managers. Why do we take such an inefficient attitude toward them? I have always been surprised that in our bookkeeping offices they keep track of the least important expenditures down to the kopeck, but nobody even registers the expenditure of time.

Take the situation with transmitting experience now. Here again we come up against a way the general state of affairs in administration influences a particular question of ordering conferences. We speak a lot about transferring experience, but the transfer itself takes place with such interruptions and such difficulties that many prefer not to travel this path. In our day of orientation toward economy we sometimes do not act very far-sightedly--we lose a ruble in order to save a kopeck. For example, in trying to save on business trips we do not allow a person to fly from Siberia to Moldavia for a week to learn about advanced practice, and if we are in a good mood and allow this, we demand immediate improvements and a linear transplanting of experience. We egg people on: here a comrade has taken a trip and examined a new situation and now things will go quite differently here . . . this is a way of killing the goose who lays the golden egg!

[Question] It has already been said that many management workers, overloaded with conferences, do not believe in the success of the fight against excesses in this area. It seems that their only joy is when three conferences are called and it is clear that there is no physical possibility of participating in all three of them . . . but then what is the point in fighting against one of the three: for one cannot be at two of them either! And where is the guarantee that as soon as you have decided to start contemplating something profoundly they will not call you and say: "You seem to be free today, drive over and we will have a conference."

[Answer] For such people it would be very useful to know about advanced practice. In the country there are models of study and imitation. It seems that there is nothing better for a manager than to break away from current problems, to break loose, to gather new impressions, ideas and forces, and to consider his work in a new way.

[Question] If one tries to sum up the results, the following picture comes clear. Bringing order into conferences depends on the overall condition of administration in a given unit and in the entire hierarchy of administration. It is necessary to deal with the overall order of administration--its organizational structure, official functions and instructions, the arrangement of information ties and, on the basis of this, conferences. Moreover, a good deal depends on you. And the psychological unpleasantness of new things is also in evidence here . . .

What then can directly improve conferences? Perhaps it is not worthwhile to have them until everything else has been done?

[Answer] Everything depends on the situation. There are so many neglected productions that this is not surprising. It is interesting that there, as a rule, they meet from morning to night. Nonetheless, these productions, of course, must begin not with conferences, but with more important issues. There are normal productions where things go fairly well, but there are reserves for improvement in administration. Why not engage in conferences here along with other issues? Perhaps one could even begin with them: establish the schedule, arrange control, eliminate clearly unnecessary conferences and so forth, and then rapidly obtain an effect.

But even the most advanced structure of administration and the most sensible official functions in and of themselves will not bring order into conferences. Additional efforts will still be needed for the aforementioned measures eliminate the need only for those conferences which compensate for shortcomings in the system of administration.

But even if everything is well with the organizational structure, information and official instructions, you will always be faced with the task of finding the best decision, and here one cannot do without conferences. They must be prepared for, and one must be able to conduct them and create the appropriate psychological situation.

[Question] Boris Nikolayevich, what can you advise the manager who has firmly resolved to introduce order into his business? What strategy and tactics should he adhere to?

[Answer] First of all it is necessary to arrange for this work psychologically. One should not begin next Monday, but after careful preparation which includes an analysis of the existing situation. One must single out the necessary conferences, draw up a schedule for them, and prohibit conferences on particular days and during particular hours, and so forth--this is also discussed in the book.

It is good to appoint one of the workers in scientific organization of labor, preferably one of those who have participated in the preliminary preparation and who is responsible for meeting the schedule and analyzing the minutes until everyone has become accustomed to the new policies. It would be desirable for this function to be the main one for the responsible person, and not one of many functions.

And, of course, the first manager should be prepared more carefully than the rest. He should provide an example. For him the main thing is to create a calm, businesslike atmosphere at the conferences. It is necessary to avoid confusion and explanations about who is guilty. He should be on guard for indicators of conformism--something is not proceeding as it should. The manager should support the workers who express their opinion regardless of whether or not it coincides with the general one or with the opinion of the manager himself. For a conference is a search for the best solution and here it is important to value opinions, and an unusual, original opinion should be doubly valued.

[Question] The last question. Are they planning a new addition of your book on conferences?

[Answer] So far they are not planning one. It is an unwritten rule for technical literature to have no more than 3 editions. But if there is one I will add to it practical recommendations.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

BOOK URGES MORE STRUCTURED APPROACH TO CONFERENCES AND MEETINGS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian
No 6, Jun 83 (signed to press 29 April 1983) pp 34-52

[Review of book "Delovyye soveshchaniya [Business Conferences] by B. N. Volgin,
Moscow, "Moskovskiy rabochiy", 1981, 3d ed., 158 pages]

[Text] It is enough to look at the way we work in the
commissions in order to say that the old Oblomov remains
and it is necessary to wash him, clean him, knock him
about and fight with him in order to gain any understanding.

V. I. Lenin

The Critical Eye of Artistic Literature

Probably everyone has read the poem by V. V. Mayakovskiy, "Those Who Overstay at Meetings", to which V. I. Lenin responded with such praise. The word "prozasedavshivesya" [those who overstay at meetings] has become an active part of our vocabulary. Nor has poetry of recent years been silent about the conference problem. Mayakovskiy's baton has been taken up by Rasul Gamzatov.

Meetings

Meetings. Their roar and silence,
Words, words, known beforehand.
It seems to me sometimes, that the whole country
Is dispersing to various meetings . . .

The shepherds meet for a week,
Leaving their sheep for the wolves to tear to pieces.
In the newspapers, poetry is not printed:
Accounts of meetings are printed [instead]. . .

In an important office almost since morning
Petitioners sit in the waiting room,
But the directors are busy all day
As deputies write their reports. . .

I want to work, to live, I want to write,
To serve you until my last breath . . .
But again I have not finished my verses:
They came to me -- called me to a meeting!

The Tasks and Practice of Business Conferences

On the Bustle of Meetings and Our Customs

Business conferences, if they can be called that, are one of the main consumers of working time of management and administrative personnel. They also occupy an important place in the work of engineers and technicians. An individual questionnaire of managers of enterprises and institutions shows that the largest expenditures of working time are for meetings. Large time expenditures along with little useful return--this combination forms the atmosphere of inefficiency which we call the bustle of meetings.

When speaking about this atmosphere one must first of all recognize that the bustle of meetings from which we suffer did not begin yesterday. Even F. E. Dzerzhinskiy suggested making a mandatory first point on the agenda for any meeting the consideration of the question of the need for the meeting itself and the expediency of holding it. Sad as it may be, up to this point the expediency of a good number of business conferences is questionable, and there are times when they are unquestionably inexpedient.

The bustle of meetings, which involves large losses of working time, entails an entire chain of negative consequences.

Competence is one of the most important Leninist requirements of managers. But not all of them meet this requirement fully. And where is this great competence to come from if sometimes the manager of an enterprise has no time for independent work or renewal of his knowledge, if he can not perfect himself as a specialist! As one of the investigations showed, a head engineer can devote only 30 minutes a week to reading new technical literature, that is, 24 working hours a year.

But let us leave the question of increasing qualifications to the side. Let us ask ourselves a question: How do we fulfill our immediate job duties?

Meetings and bustle are frequently interconnected by a cause and effect relationship. When there is an abundance of meetings can one really do anything otherwise than by fits and starts? The disease of the "bustle of meetings" in serious forms leads to completely abnormal conditions for carrying out direct job duties.

An abundance of meetings and conferences is also harmful in that they frequently serve as a smokescreen, creating the appearance of hard work which, in fact, is going nowhere.

Why Are Conferences Necessary?

As the scientific and technical revolution develops and production tasks become more complicated there is a tendency everywhere toward increased risk of administrative mistakes and mistaken decisions. A correct decision to complicated crucial national economic problems is closely interwoven with a multitude of others that are similar to them and is possible only with collective reasoning.

Along with its immediate significance, every efficiently organized business conference performs an important training and educational function. At the business conference workers learn, primarily from the manager, to think on a large scale, in a statewide way, to approach the problem under consideration comprehensively and from all sides, and to take into account not only the immediate, but also the remote consequences of the variants of decisions that are developed. There is training in the art of speech, literacy and efficiency of presentation of ideas, the ability to argue and to defend one's positions.

For the majority of workers, attending a business conference is almost the only opportunity to see and hear the manager of the higher level and learn from him. And the manager does not have the right to forget about this. When calling a conference he must think about how to conduct it so that it is most advantageous from the training and educational standpoint.

Regularizing Conferences and Conditions For Economy

The conference is one of the most costly kinds of job activity because of the fact that a multitude of people are doing the same work and searching for the solution to the same problem all at the same time. Moreover during the time of the conference its participants are taken away from their direct duties and their immediate service functions. Expenditures on each conference are directly proportional to the number of participants and the length of the conference.

This is why it is necessary to be especially concerned about the results of each conference, for otherwise indefinite decisions or decisions that are not subsequently realized can in no way repay the expenditures on it. Unfortunately, losses from conferences are not clear and therefore are not always taken into account. The concept of conditions for economizing should definitely include conditions for economizing on business conferences. And so the essence of the problem of the struggle against the bustle of conferences lies not only in saving working time of the workers, but also transforming business conferences into a highly effective method of administration.

There is a category of workers who expect formulas from the author. The book asserts that we hold conferences too often. Let the author say specifically by what percentage it is possible to reduce the number of conferences. It is extremely difficult to satisfy these readers for the simple reason that there is no single formula in the approach to meetings. The state of affairs is different at various enterprises and it is difficult to give general and completely precise advice for all of them. But still we shall try to satisfy the readers who want concreteness. One can say with sufficient confidence that 30-40 percent of the meetings conducted at enterprises are superfluous.

Preparation For Business Conferences

Let Us Determine The Agenda

The preparations for a conference include a whole series of actions: making a decision to hold it (to hold it or not to hold it), determining the subject, forming the agenda, determining the tasks, the participants, the approximate duration, the date and time for beginning, preparing the manager himself,

preparing the speech and the draft of the decision, preliminarily preparing the participants for the conference and preparing the premises. There are many actions, and they are interrelated and influence one another.

Let us begin with the decision to hold the conference. First of all it is necessary to evaluate its expediency. There are exceptions in cases where this evaluation has been predetermined, that is, when a permanent group of issues that require collective consideration has been determined ahead of time. One must remember that meetings cannot replace other forms of administration: personal contacts with workers, direct study and resolution of problems by the manager himself, the issuance of job instructions (for instance, instructing a group of workers to develop proposals regarding some particular issue), and so forth.

If the manager, the organizer himself, is confident of the relative usefulness of the conference, and even more so if he is convinced that the participants will sense this great relative usefulness, the conference must be conducted. Otherwise it should be decisively rejected.

The quality of the discussion depends to a considerably greater degree on the carefulness of the preparation and the skill in conducting the conference than on the number of issues included on the agenda. And is the reason for our meeting so frequently not that we are trying to arrange an individual conference for each issue? Then we do not have to worry about filling up the agenda.

As the agenda increases the quality of the consideration of each issue frequently even improves if the discussion is carried out efficiently and clearly, strictly in observance of regulations. It is useful to recall that under Lenin, at meetings of the Sovnarkom the speaker was given 5-10 minutes and the discussants only 3 minutes, and in spite of the large number of issues on the agenda, the meetings of the Sovnarkom proceeded very efficiently.

Of course, an extremely large agenda is inefficient. Tired because of the excessive number of issues under consideration, the people lose their desire to penetrate into them and the discussion will be increasingly superficial. The optimum lies somewhere within the following limits: 1-2 major issues and, additionally, several minor ones which can be resolved fairly simply and quickly.

The Composition of the Participants

One should call a minimum number of people to a conference, and only those whose participation is actually necessary, without whom the meeting would be ineffective. One should never invite people in order to increase numbers or to make the conference representative.

Among participants in every meeting one can single out a group of people affected directly by the issues, a group of people who are affected to a lesser degree and, finally, a group of people who are not directly affected by the issues under consideration. It is enough for workers of the last two groups to familiarize themselves with the written materials after the conference.

A problem conference should be conducted in a narrow circle of competent people. The absence of any of them reduces the quality of the discussion and the decisions that are made. The optimal variant is when the number of participants in the conference and the number of those actively participating in the discussion of the issue coincide. Participants in instructive and operational conferences should be executives and (or) their immediate supervisors.

Date and Time for the Beginning of Conferences

Having determined the approximate length of the conference, it is necessary to assign the time and day for holding it. Of course, the date of the conference should not be the first one that comes in to one's mind or simply one that is convenient for one of the managers. The managers of the enterprise or institution should consider recommendations of specialists in scientific organization of labor and establish for workers of all categories, from the lowest to the highest positions, days of the work week that are free of conferences and other measures.

One should avoid nonplanned meetings that take people out of their routine and, as a rule, are not effective enough because of the hasty preparations. Yet nonplanned meetings are flourishing in some places. Thus the time and motion studies conducted during the course of a week at the Pavlograd plant for chemical machine building showed that of all the production conferences that were held during that period less than half were planned beforehand.

Among other things, nonplanned conferences lower the level of the art of job interrelations. People inadvertently lose such a good business quality as responsibility. They are forced to break their own promises, to interrupt business meetings, consultations and so forth, which were discussed earlier.

Now about the time for the beginning of the meeting. Any meeting interrupts the work rhythm and reduces productivity. "There is nothing more powerful in the life of a human organism than rhythm," said academician I. P. Pavlov. A reduction of labor productivity is especially noticeable when conducting meetings that interrupt the entire working day.

In order not to force the workers to endlessly change from one kind of work to another and in order to preserve the sequence and system of their work as long as possible, the conferences should be held only at the beginning or the end of the working day or after the dinner break. It is most preferable to hold conferences at the end of the working day or after dinner: in the morning, when the mind is still fresh, it is necessary to give people the opportunity to carry out the most complicated assignments.

Planning Conferences at the Enterprise

As an example of efficient planning of conferences, let us present the experience of the Santeckhlit plant for sanitary and technical equipment (Akhangaran, Uzbek SSR).

The schedule of the working day includes hours of independent work that are the same for the entire plant--0830 to 1000 hours each day. During this time there should be no conferences, meetings or other mass measures. Exceptions are allowed only in emergency situations.

Before 1400 hours it is prohibited to conduct plantwide measures except for those included in the schedule. The work of various commissions and nonplanned conferences and also measures conducted no more than once a month are put off until Fridays, during free time, but not for more than 2 hours.

The schedule of measures before 1400 hours includes only 2 kinds: operations conferences (weekly) and the day of quality (once a month). The rest of the conferences begin after 1400 hours. The entire monthly expenditure of time on business conferences amounts to: for the director and head engineer--20 hours, the head economist--14 hours, the shop chiefs--28 hours (some of these conferences are telephone conferences).

Increased efficiency in work and a thrifty attitude toward the expenditure of working time have provided appreciable success for the entire collective of the Santeckhlit plant.

At the Moscow machine tool building plant Krasnyy proletariy imeni A. I. Yefremov within the framework of the KSUKP at the plant they have created a standard calendar of business operations and control conferences which stipulates the days for checking on the schedule for the preparation for production and the plans for new technical equipment, checking on the organizational and technical plan (including the section "product quality") and plant days of quality.

Each day at the plant they hold:

From 8:30--an operations conference of the plant management at the sites;

From 8:30 to 0900--an operations conference on exports (held by the deputy chief of production);

From 0900 to 1000--an operations conference on production for the first shift (held by the chief of production for the dispatcher panel);

From 1700 hours until 1730--the same conference for the second shift;

From 1430 to 1500 hours--dispatcher inspection of the shops (held by the chief of production for the dispatcher panel);

The rest of the conferences are included in the standard calendar with a designation of the participants with the figures: director--01, head engineer--02 and so forth.

Preparation of Participants in the Conference

The preparation of the the participants in the conference amounts to promptly familiarizing them with the agenda and with all the necessary materials in order

to arouse in them an interest in the questions that are being raised and a desire to express their viewpoint.

It is very important to basically prepare the participants for the conference. For we want to know their opinion about the problem under consideration. Thus their opinions should be thought out ahead of time, formulated, as it were, in mature thinking, and they should not be hasty opinions that come into their head during the meeting. It is necessary to announce the agenda of the conference ahead of time and give the participants the materials which require thoughtful consideration.

Preparation of the Report

The success of a business conference depends largely on the quality of the report. The report must be prepared and prepared carefully. Even significant expenditures of time on its preparation are recouped by the efficiency of the conference and the results from conducting it. We all know that the living word has great force. And not only in the positive sense when it is capable of drawing people to labor and to victory. The living word can also bring about a negative effect. A confusing, monotonous and long report develops a feeling of apathy in the listeners and a lack of desire to think deeply about the problem and participate in its discussion. A conference with a poorly prepared report is almost always distinguished by superficial resolutions and not profound ones.

Preparation of the Manager Who Conducts the Conference

It would seem that a manager would need no special preparation for a conference when he has conducted them hundreds of times. But this is not the case. A West German specialist in administration, Dr. V. Shreblowskiy notes that many conferences are doomed to failure even before they begin. This happens when those who are supposed to be in charge of the conference forget to prepare for them themselves. V. Shreblowskiy thinks that managers must study scientific methods of leading a discussion. They are based on the five following rules.

It is necessary to determine a simple theme for the conference. Frequently it is so dispersed and so many aspects are implied that after the discussion the participants are left with a feeling of dissatisfaction.

It is necessary to develop the agenda most carefully and to determine the most expedient sequence for consideration of the issues. Here one should proceed primarily from psychological criteria. It is best to begin with the subtopics that can be resolved most easily. The success will encourage the participants in the conference.

It is necessary to be convinced that the participants in the conference are familiar with the facts which can be considered during the course of the discussion. Familiarization with the facts should be organized before the beginning of the conference, and the appropriate documentation should be given to the future participants.

It is desirable to send out the invitations to the people who will participate in the conference as early as possible. From the invitation the subject and the purpose of the conference should be clear. One should avoid invitations for prestige.

The meeting place should be based on the goals of the meeting. This is very important for creating a businesslike atmosphere.

A brief introduction is useful for effective work of the conference. This introduction is the prerogative of the manager. He should not insist on his viewpoint even during the course of the conference, but it is absolutely fatal to give it at the very beginning of the conference.

Of course the manager can express his attitude toward the problem, but in a neutral form and as much as possible in the third person: "Regarding this question certain specialists express this judgment . . . let us think about the degree to which they are correct."

Preparation of the Premises

The last stage in the preparation for a conference which can in no way be neglected is concern for the premises. The premises should provide for normal working conditions. It is very bad if a crowded room is packed to the limit and people are even sitting on the windowsills. It is no better when a small group is lost in a large empty hall, where some newcomer is shy and will not risk saying anything. Therefore one should not be drawn to holding conferences in legislative halls, conference rooms or clubs.

Perhaps the most common place for conferences is the manager's office. This is convenient for the person whose office it is, but it is not very good for those he invites in: here the very situation emphasizes the inequality of the participants, which in no way contributes to hard creative work.

The premises for a conference should be well insulated for sound, the air temperature should be normal, the furniture should be convenient for work, and there should be good ventilation. It should be warm, well lit and it should satisfy the requirements for physical comfort.

Conducting Business Conferences

On the Duration of Conferences

Excessively short conferences are not our biggest problem. We suffer much more from lengthy conferences.

The duration of a conference, naturally, should be selected intelligently. There is no point in hurrying to consider any issues: in this case one can hardly manage to come to serious, well-thought-out decisions or acquire anything truly essential from the conference. Moreover, if the conference is intended to last approximately a half hour, to reduce the time spent on it any more does not produce an appreciable savings since concealed losses will become the main ones in the overall balance of time that is spent. From what

has been said it follows that one should not exert all efforts to reduce the time spent on the conference. If the issue requires approximately a half hour's discussion, obviously, it is best to bring up several more issues.

It is difficult to give an effective time period for a conference that is suitable for all branches of the national economy, all levels of management and any subject matter. Roughly one can say that the length of an operations conference should be 20-30 minutes, and all other business conferences--1.5-2 hours. The consideration of any fairly complex issue should be carried out in 40-45 minutes.

The invitation to the business conference should indicate, in addition to the time it begins, the expected time it will end. It has been statistically confirmed that in cases where people have a rough idea of the time when the conference is to end, its duration is reduced by approximately 5-10 percent as compared to similar conferences where the expected finishing time has not been announced. The reasons for this phenomenon are purely psychological. Timely information about the expected time for ending the conference will make it possible for the worker to plan the rest of the time he has left.

The Main Thing--To Listen to the Opinions of the Participants

The main task of the manager (chairman), the quality of whose decisions determine the success or failure of the conference, is to provide the opportunity to hear the opinions of participants and seriously deliberate on them.

Leadership of a discussion requires a certain art and the observance of a number of rules.

Do not allow a discussion to develop according to the scheme of the argument in the popular fairy tale: "Clipped!--No, shaven!--Clipped!--Shaven! . . ." An argument where someone else's opinion is rejected without any argument, simply using phrases of the type: "You are mistaken," "That is quite wrong," cannot lead to success because these arguments are won not by the most intelligent, but by the most stubborn and the most outspoken.

Instill in the speakers the habit of speaking with restraint, quietly, without hurrying and without showing emotion, even in spite of their gripping feelings ("Finally I--first of all--thought how we should act!" and so forth).

Do not allow direct attacks on opponents. At a conference there should not be speeches like this, for example:

"Well, comrades, Vasil'yev has spoken before me. And he has spouted nonsense. Listen, Vasil'yev, I will look you straight in the eye and say: you have to think! . . ."

Any speaker should address the entire audience, which contributes to creating a businesslike and calm atmosphere. When the polemical fervor of a speech is addressed directly to the opponent, naturally, he is incited to give a "worthy response" and the argument that arises loses its businesslike nature. The

manager should display special caution when he expresses his disagreement with someone's idea. Here the following diplomacy produces success: at the beginning of the speech one discusses those issues on which your opinion coincides with the opinion of your opponent, and you even reinforce this opinion with some additional evidence. This approach makes the opponent more inclined to listen to your conclusions. And only then should you present your counterarguments, which should be concrete and not evaluative ("not seriously," "doubtfully," "with this it is difficult to agree").

A discussion proceeds actively if the people do not feel restricted and restrained but, on the contrary, conduct themselves freely and without restraint. And here we can learn a great deal from V. I. Lenin.

"In spite of the strictness and procedure which were maintained at meetings," recalled A. A. Andreyev, "one must say that at these meetings one did not feel any strain, and it was a completely free friendly situation. Lenin was demanding, but never in his relations with people was there anything irritating or insulting. Everyone said what he thought without being afraid of rudely silenced.

"One could argue quite freely with Lenin on any issue, and there were such arguments. He never considered his opinion to be indisputable and always listened attentively to the conclusions of others.

"Lenin did not make those in attendance feel inhibited, and I would say that when raising the leading issues he rather encouraged initiative and free expression of ideas, and he always listened attentively if a person was saying something interesting. At the same time he never let pass anything that was principally incorrect . . .

"If he saw correct conclusions in someone's speech, he never tried to formulate them, as a chairman, in his own words, but immediately addressed the speaker: 'Please dictate your suggestion.' When chairing meetings Lenin never claimed that his opinion was to be regarded as the final word . . .

"The main thing that Lenin always achieved was that people understood and were convinced of the correctness of the conclusions or the formulation of the task, and this is precisely what correct decisions must be based on.

"Lenin always demanded precise information and unconditional fulfillment of the decisions that were made. Therefore the meetings always began immediately with a check on the implementation of decisions that had been made and an announcement of the actual state of affairs . . .

"He could not tolerate general discussions without factual proof and concrete suggestions, and in these cases he even interrupted the speaker, demanding preciseness and truly businesslike suggestions."*

*"Vospominaniya o Vladimire Il'iche Lenine" [Reminiscences of Vladimir Il'ich Lenin], Vol 2, Moscow, Gospolitizdat, 1957.

Conferences absolutely must reveal shortcomings, mistakes and omissions. But one must not forget about the final goal--to improve the state of affairs. Questions such as "How did this happen?" or "Who is guilty?" must not crowd out the main issue: "What must be done?" (of course, this should be answered concretely and not with formulas like "arrange work . . ." "increase responsibility . . .", "demand that order be imposed . . ."). This is precisely why it is necessary to make sure that each speaker presents his variant of the solution to the problem and that main attention is devoted precisely to this, and that criticism of the state of affairs is not made the center of attention.

Caution: Conformism!

Conformism, that is, the overwhelming influence of the majority opinion over the minority opinion as a result of the authority that is naturally inherent in any majority, can be a serious impediment to comprehensive and objective discussion. A person who feels that the majority does not support him usually finds it difficult to defend his opinion and sometimes stops the argument even without presenting all of his own conclusions. And yet the truth can end up precisely on his side. When discussing scientific and technical issues this situation is fraught with the selection of erroneous directions for work.

The instrument of voting is a sharp weapon and if the democracy of the majority demands of each and every person mandatory fulfillment of the decisions adopted by the majority, this same democracy of the majority requires that these decisions be made on the basis of objective and unimpeded discussion, where the floor is given to those who dispute with the majority. There is no true democracy of the majority without a very careful, attentive attitude to the opinion of the minority.

On The Procedure at Meetings

It is good form for the manager not to be late for a meeting and make people wait for him. A manager who is never late has the right to demand the same of others. The manager who has become accustomed to beginning any meeting with a 5-10 minute delay, waiting for late comers, regularly gives a lesson in disrespect for colleagues who have arrived on time.

"Vladimir Il'ich opened the meeting of the Sovnarkom exactly at 6:00 right on the minute. During 2 years I do not recall a single case when the meeting was opened even with the most insignificant delay. The meetings were opened with any number of attendants, which, naturally, made it incumbent on all members of the Sovnarkom to be precisely on time . . . In the minutes of the Sovnarkom there are notes of tardiness of members of the Sovnarkom with a precise indication of the number of minutes they were late. Vladimir Il'ich greeted a member of the Sovnarkom who appeared in the meeting hall late either with a remark or with a reproachful nod of the head, and if this happened repeatedly he threatened them with a reprimand which was to be published in the press."*

*Leplevskiy, G. M. "O rabote V. I. Lenina v Sovnarkome v 1921-1922 gg" [On the Work of V. I. Lenin in the Sovnarkom in 1921-1922], Moscow, Politizdat, 1981.

For us it is generally accepted that a problem conference is led by the manager. Let psychologists think that it is useful for problem job conferences to be conducted under the leadership of an elected chairman, following the examples of meetings of public organizations. Scientists assert that at a meeting where the manager does not put himself in the leading position, but sometimes deliberately recedes into the shadows (for example, by sitting in the last row), a favorable psychological atmosphere is created. And this helps the manager to improve his contact with his subordinates and to get to know them better.

A manager who conducts a meeting in his office definitely must not interrupt it with telephone conversations, visitors, calling his secretary and so forth. Such behavior not only wastes the time of those in attendance, but also is simply impolite to them.

The chairman should not weaken control over the rhythm of the conference. Sometimes it happens that the conference seems to begin enthusiastically and dynamically, and then the tempo gradually slows up for some reason. Close to the end, it no longer proceeds, but drags. And yet it should be ended in the same good, efficient rhythm with which it proceeded. And there is no point in the chairman calling on people to speak until they are exhausted.

It requires special ability to limit discussions so that, on the one hand, they are not confused and, on the other, so that they are not excessively drawn out. To stop discussions if they are developing in an "undesirable" direction means to violate job ethics instead of calmly expressing one's own conclusions and allowing others to do the same.

In order for those in attendance not to lose interest in the discussion of one issue or another, the person in charge should try not to allow repetition of the same ideas and conclusions in various speeches.

In the same way it is necessary to restrain individual participants in the meeting who have expressed themselves several times regarding one issue or another on the agenda. People should be clearly aware that before speaking it is necessary to gather their thoughts and only then can they present them logically and convincingly, and they should not take the floor in haste and then endlessly augment, correct and clarify their own speech. At one time V. I. Lenin established the following policy in the Sovnarkom: no one has the right to speak in discussions more than twice on the same issue. This policy is reasonable under modern conditions as well.

Not allowing recesses prolongs the meeting. This is why in a lengthy meeting with dozens of participants every 15 minutes there should be a 10 minute recess, and at a conference with hundreds of participants, when much more time is necessary to leave the auditorium and return to it, it is necessary to have a recess of 15 minutes every hour and a half.

Regulation

Everyone knows what regulation is. But not everyone knows that regulation must be a mandatory law for any conference. If one does not determine regulation for a report and speeches in discussion, prerequisites are immediately created for an unbusinesslike situation.

One of the originators of scientific organization of labor in our country, Aleksey Gastev suggested a "formula" for a brief business talk.

It is possible to present the most complicated idea in five minutes.

First give the main essence in a brief phrase.

Spend a minute on this.

Then give commentary and figures.

This takes four minutes.

The chairman plays a large role in observing the regulation. Every manager who speaks should also display respect for regulation. If he precisely stays within the amount of time allotted to him this produces an impression on the listeners. And producing an impression on subordinates is also a method of administration . . .

The chairman of the conference usually resigns himself to the heavy burden of ensuring regulation. This distracts him from the essence of the discussion and therefore it frequently turns out to be quite useless. The chairman forgets to check on regulation and becomes an attentive, allowing deviations from the regulation in one direction or another.

Among the innovations in the clock industry is a "noiseless" alarm clock. On its elegant face there is a green light, and within a given number of minutes before the time for which it is set the green light changes to yellow, and at the time for which it is set it flashes and a red light begins to blink. There is no sound at all. Such an alarm clock would be very suitable for the situation of a business conference.

On The Advantage of Humor in Conferences

There is a good aphorism: "One cannot take seriously that which is constantly serious." This is probably true with respect to the collective. If the collective is constantly serious, its jokes, smiles and laughter are considered inappropriate or are directly forbidden, then this collective is truly on guard. It is no wonder that scientists consider a noncompulsory, friendly atmosphere to be one of the most necessary elements of many methods of intensifying the process of decision making (the brainstorm method and so forth).

Cheerfulness is valuable not only for business, but also for the health. A person with a vigorous, cheerful attitude resists diseases better and withstands illnesses more easily. This is why the French assert that the arrival of a circus does more for the health of the residents of a city than the opening of a new pharmacy.

An Ode To Tea

There are many good drinks--cooling, nutritive, therapeutic--and each is valued in its own way and is famous in its own way. But no other drink can compete

with the drink called "tea." A glass of tea improves the mental capabilities by approximately 10 percent within three-fourths of an hour, and the uplift is 3 times as great as that which can be produced by beer. The general tonic effect of tea begins within a half hour after it is drunk and continues for 5-6 hours.

"Tea gives a person resolve, increases his capacity to change his impressions, and contributes to concentrated thinking," says the French psychiologist, Moleschott.

All this is good but what does this have to do with meetings? For their participants are engaged in serious mental labor. In the process of developing fatigue of the brain adrenalin is secreted, the quantity of glucose in the blood decreases and the brain nutrition deteriorates. Tea could make up for these losses of the organism.

It is a pity that after the messengers disappeared in many institutions when the staffs were reduced the traditional trays with tea for the participants in the conference also disappeared. This is a clear example of spending a ruble in order to save a kopeck.

Minutes

Old soldiers say: "Always keep your powder dry." Experienced employees advise: "Keep your minutes in order at all time." Minutes are the main justifying document for numerous commissions. Of course minutes are not only for commissions. Minutes are the primary official document on whose basis the management has the right to demand of workers the fulfillment of the assignments that have been given to them. Well kept minutes, which briefly and correctly register the main content of the speeches and the formulation of the decisions that are made can be a lightening conductor in job conflicts that arise from unpremeditated or deliberate distortion of somebody's idea, forgetfulness or a misunderstanding of the essence of the matter. The minutes reflect the actual content of the issue discussed at the enterprise on the day and hour of the conference.

The Resolution

The final stage of the conference is the adoption of a resolution. Resolutions can be prepared in two ways:

a specially selected commission for preparing a resolution draws up a draft of it beforehand. The draft is read at the conference. The participants make additions and changes in the draft, after which the resolution is approved;

right at the conference the chairman sums up the results of the discussion and formulates a resolution;

the significance of the conference decreases to zero if it adopts unfocused, unclear decisions.

The manager (chairman) must counteract such tendencies and orient the collective toward clear-cut, direct, unambiguous decisions which do not allow twisted interpretations.

The implementation of a resolution adopted at a business conference is the final part of the work on an economic problem. It should be noted that the resolution should contain all the necessary prerequisites that facilitate its implementation. For a number of tasks the resolution should include information not only about who is to implement it, where, when and with what means this is to be provided, but also about how the person who implements it should arrange his work.

It would be desirable to periodically sum up the results of previously conducted conferences and to analyze their effectiveness.

A Brief Reminder To The Manager About Conferences

Business conferences are one of the most costly kinds of job activity. Make them maximally effective!

It is impossible to obtain an effect from a conference without careful preparation for it. First of all check yourself: are you convinced that the conference is necessary?

When gathering information do not convene conferences. When convening conferences, do not gather information.

Give the participants in the conference the opportunity to gather their thoughts. Announce the agenda ahead of time.

Reduce the number of meetings. A certain increase in the number of points on the agenda does not reduce the quality of the discussion.

Invite to a conference only those without whom it cannot be effective.

Strive for a candid, calm, businesslike atmosphere at the conference. Discuss the opinion and not the person.

Limiting time is the law of a conference. Put a stop to verbosity and repetition. Fight against delays.

Refusing to have recesses prolongs the conference. A cup of tea accelerates it.

Do not interrupt the course of the conference with telephone conversations and instructions to your secretary.

Check on the concreteness of the decisions that are made. Supervise their implementation.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

BENEFITS OF USING FUEL ADDITIVES EXPLORED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 6, Jun 83 (signed to press 29 April 1983) pp 53-63

[Article by M. O. Lerner, candidate of technical sciences, commission of the USSR Academy of Sciences on mechanics and technical equipment for utilizing certain oxides, and L. K. Tatevosyan, head engineer, All-Union Scientific Research Institute of Economics of the Gas Industry (Moscow): "What to 'Feed' Engines"]

[Text] Recently the scope of research and practical testing of the properties of fuel and oil additives has expanded, as has the spheres of their most effective application. An additive is a compound or complex of compounds that are added to the fuel or oil in a concentration of from hundredths to 1-2 percent in order to improve their quality, to expand the range of their application, to reduce harmful effects on the engine, and to reduce harmful impurities in exhaust fumes.

There is no longer any doubt that with close enough interaction among scientific workers, engineers and production workers it is possible on a large scale to introduce various additives that make it possible to save fuel, make the production of petroleum products more economical, and increase the maneuverability and the efficiency of engine construction and the branches related to it by simultaneously solving important problems related to improving working conditions and reducing pollution of the environment.

The majority of additives have the capability of effectively influencing only one of a multitude of indicators that need to be changed. Some can affect a number of properties of fuel.

Additives improve the energy properties of fuel, retain its properties during transportation and storage, prevent the harmful influence of fuel on containers, equipment and engines, facilitate the operation of engines with sharply changing working conditions, and so forth. They are winning more and more important positions in the economies of many countries. In the developed industrial economies the volume of sales and profit and the technology for producing additives constitute a business secret which is protected by law. The increased economic role of additives can be judged from the expansion of their already fairly diverse assortment and their increased role in foreign trade.

Additives For Gaslines

Until recently obtaining high-octane gasolines with antiknock additives was based on the application of tetraethyl- and tetramethyl lead (TES). Thus the United States produces more than 0.5 million tons of TES a year. The total economic effect from the utilization of gasoline with antiknock additives in a number of countries amounts to hundreds of millions of dollars a year. But TES turned out to be ecologically unsafe substances. This caused all the developed countries to search for an ecologically harmless equivalent. Even from the purely technical side TES is far from an ideal antiknock additive. The products of combustion of gasolines with TES cause burning of the valves and the heads of the cylinder blocks, and they cause the spark plugs not to work as well.

Research has shown that it is best to refrain from using TES altogether. A number of countries have already prohibited the use of gasolines with TES and they have begun intensive searches for replacements. This kind of work is also being done in the Soviet Union.

As early as 1959, under the leadership of academician A. N. Nesmeyanov, manganese compounds were investigated as antiknock additives, for example, cyclopentadienylmanganese (CTM). Participating in the work were institutes of the USSR Academy of Sciences, the USSR Academy of Medical Sciences, union ministries (the Ministry of the Chemical Industry, the Ministry of the Automotive Industry, the Ministry of Agricultural Machine Building, the Ministry of Health and others), the RSFSR and Armenian SSR Ministries of Automotive Transportation, and a number of enterprises. More than 20 tons of CTM and more than 50,000 tons of gasoline that was modified with it were manufactured.

Development and experimental testing made it possible to provide a technical and economic substantiation for the organization of the production of 30,000 tons of CTM a year. The overall mileage of motor vehicles amounted to about 16 million kilometers, and the bench testing of specialized devices and full-sized engines which used gasoline with CTM were conducted for 30,000 motor hours. The tests were conducted under ordinary circumstances of the existing taxi fleets and automotive enterprises. The ecological purity of these gasolines was proved and confirmed by an official conclusion of the Moscow Scientific Research Institute of Hygiene imeni F. F. Erisman: "CTM additives do not increase the toxicity of the gasoline. When studying the effects of gasoline vapors containing CTM in a quantity of 1 gram per kilogram, the results were the same as those with pure gasoline."

Now on the basis of CTM even more effective and harmless antiknock additives have been developed. Formulas based on the manganese antiknock additive can be used successfully not only for gasolines, but also for improving alternative kinds of fuel. The effect of the manganese antiknock additives can be increased by combining them with other kinds of antiknock additives, for example, those based on aromatic amines. As a result, the scientific and technical commission under the USSR State Committee for Science and Technology recommended that CTM be introduced immediately.

Additives For Diesel Fuel and Multifuel Engines

Diesel engines expend 30-50 percent less fuel, but they are large and heavy as compared to carburetor engines. There is usually an unpleasant odor when they are operating. These shortcomings can also be easily eliminated when an additive is added to the fuel. In addition to these internal "bottlenecks," there is a more serious obstacle, of an external nature, on the path to the use of diesels. The essence of it consists in that with the given structure of the capacities and technologies for producing motor fuels there is a fairly rigid limitation on the discharge of light and heavy fractions from a given volume of processed crude petroleum, all other conditions being equal.

The use of diesels, by increasing the demand for diesel fuel, leads to a reduction of the demand for gasoline. With a 65-80 percent use of diesels there will be an "overproduction" of 30-37 percent of the gasoline (of its consumed volume). The output of gasoline can be reduced by gradually limiting costly and energy-intensive processes in oil refining, those which are oriented toward eliminating the discharge of light fractions--processes like rigid catalytic reforming.

But even with the achievement of the maximum output of diesel fuels, surplus production of gasoline will correspond to high levels of the use of diesels. With 65-80 percent use of diesels, salvaging it as motor fuel can produce a savings of 5-10 percent of the crude oil and 3-5 percent of the expenditures on providing fuel for the fleet of internal combustion engines. To do this one can use fuel with a broad fractional composition (ShFS) and develop engines and fuel additives that make it possible to use gasoline in diesel engines.

The utilization of ShFS fuel is technically difficult. It is necessary to significantly improve the fuel equipment and to improve the process of combustion of fuel. Along with this it is necessary to complete the development of the utilization of gas condensate, gas and other alternative fuels in engines that operate with ShFS fuels.

In spite of the natural specialization of engines and fuels for them, and also the specialization of the developers of the corresponding technical equipment, practice has raised the question of creating engines that are less selective in terms of fuel. The multifuel engine (MTD) can expand the resource base for the production of fuels, will make it possible to satisfy the need for them with reduced expenditures, and will increase the flexibility of systems for supplying fuel. It would be possible to utilize up to 70 percent of the fuel fractions of petroleum, which, with a savings of 30-40 percent of the fuel (as compared to the variant of individual utilization of diesel fuel and gasoline) will reduce the need for crude oil.

The MTD's that have already been developed take advantage of all existing technical solutions for diesels and engines with spark ignition. So far less attention has been devoted to the physical and chemical means of controlling the combustion of fuels with variable composition. But still changes in the combustion of ShFS fuels can be corrected by the multifunctional compositions of additives or multipurpose additives. Then instead of the task of adapting the diesel engine to light fuels, one solves a principally different problem--

bringing the parameters of light fuels closer to the parameters of diesel fuels. This is already a physical and chemical task. But the role of these additives or their bases is claimed by cyclohexylnitrate, norbornyl nitrate and a number of other polymer compounds. The technology for producing these additives has already been developed, and there is experience in their practical utilization--the operation of diesel engines with ShFS fuel and gasoline that has been modified with additives.

The more complicated tasks include the utilization of fuel made of sulphur raw material. The harmful effects of sulphur compounds on the engine can be eliminated both by modifying the fuel with additives and by improving the design materials for engine construction. This would reduce expenditures involved in completing the purification of fuel during oil refining. But completing the purification increases the ecological purity of the fuels and salvages sulphur in reduced-waste technologies for oil refining. In order to select the optimal decisions in this area, in addition to technological-technical and technical-economic substantiations, it is necessary to have serious ecological-economic research.

Additives For Motor Fuels Made of Gas and Gas Condensates

The quantity of gas condensate deposits considerably exceeds the quantity of petroleum deposits, and geographically they are more uniformly distributed. The latter makes it more difficult to organize the collection and transportation to the places of processing, but in the event that they are used as fuel in the places of extraction and in adjacent areas, this is a big plus.

The natural properties of condensate contribute to its utilization as fuel which requires minimal preliminary preparation. Stable gas condensate is distinguished by a high content of light fractions: 70-75 percent of automobile gasoline and 25-30 percent of diesel fuel. There are practically no resinous compounds or asphaltenes. Processing does not require vacuum distillation or acid cleaning, and therefore all the technology is much simpler and less expensive. The national economic effect exceeds that of processing equal volumes of petroleum 2.5-fold.

In terms of their physical and chemical properties the majority of condensates are close to automobile gasoline and diesel fuel. The exceptions are their lesser knocking stability and their inferior flammability, which can easily be regulated by the appropriate additives. As a result of stabilization with gas fractionization and mixing the concentrate with additives that are suitable for the specific deposit, one can obtain from gas condensate dry and condensed gas, automobile benzine and diesel fuel. The latter can be used locally, correspondingly relieving the transportation networks.

The Shebelinskiy and Azerbaidzhan plants have been operating in the gas industry for many years. They use condensate to produce automobile gasoline, diesel fuel and other petroleum products. Several smaller installations are also operating.

Gas engines and gas motor compressors with large unit capacities are being used more for preparing and transporting gas. As fuel for them one uses gas from various deposits and, consequently, with various chemical compositions and knocking properties. Therefore when operating gas motor compressors there is knocking and a decline of the power and the efficiency factor of the engine. Additives make it possible to increase the time intervals of knock free operation of gas motor compressor engines by 40 percent. This increases the productivity of the gas pumping equipment by 10-15 percent and the handling capacity of the gas line, by 3-4 percent.

Water Soluble Antiknock Additives

Water as a factor in improving the operation of engines and economizing on fuel has long attracted the attention of researchers. It reduces the heat strain on the engine, increases the reliability and effectiveness of its operation, saves on fuel, increases the knock resistance of low-octane gasolines, and reduces the concentration of nitrogen oxides and carbon in the exhaust fumes. On the other hand, it somewhat reduces the stability of the operation of the engine and increases the concentration of hydrocarbons in the exhaust fumes. When listing the merits and shortcomings of using water to improve the operation of an engine, people rarely recall an important fact: in all experiments costly distilled water is used.

Large quantities of water in fuel, while producing the desired effect, simultaneously cause negative consequences which are almost equal. But it has turned out that water is irreplaceable when adding to fuel a number of additives that are not soluble with hydrocarbons. Thus it is possible to combine the useful effect of water on the operating process and to introduce antiknock additives into the fuel.

We have very cursorily sketched the possibilities that are opened up by only one class of additives (one should take into account that the use of additives will also require the use of ecologically "pure" fuels--hydrogen, alcohols and so forth). The extensive introduction of effective additives of all classes will undoubtedly make it possible to ease the problems related to motor fuels, to increase the efficiency of the operation of the automobile and tractor fleets in the country, and to solve certain ecological and social problems.

In their totality the additives that have been considered provide the following favorable results:

they save on motor fuel as a result of a greater proportional production of energy and transportation work, which is tantamount to increasing fuel resources;

they limit the application of rigid catalytic reforming in petroleum processing it is possible to process and consume products from gas condensate with a simpler and more economical system;

the area of effective application of gas as motor fuel is expanded;

the load on petroleum pipelines in the system of transportation of motor fuels will be reduced as a result of bringing nonstandard fuels into the realm of acceptable parameters. Fuel with a broad fractional composition can be used in diesel engines;

the deepening disproportions between the production of gasolines and diesel fuels with the expanded scope of the use of details can be prevented by bringing diesel fuel from directly distilled gasoline fractions up to the standard parameters;

the possibilities of maneuvering resources of motor fuels and raw material for their production will be diversified;

the level of harmful effects of products from the combustion of fuels on workers and the environment will be reduced;

the operation time of engines between repairs will increase as a result of optimization of the combustion of fuel, improvement of its antiknock properties and reduction of the corrosion effects on materials.

Impediments to Extensive Introduction of Additives

The problems that arise in this sphere are common to any situation in which one introduces an innovation that involves several branches or departments. There is also a natural caution about decisions that are made when the risk and probable advantage have not been clearly determined. Also of no small importance is the desire to wait out the period of specialization of various forms of the developed innovation until the period of the introduction of the most effective forms in the most important areas of their application.

With respect to fuel additives the inertia in thinking is expressed in the inadequate understanding of how crucial the problem of intensification is in the area of motor fuels and in the fact that people are not optimistic enough in valuating the changeover that has been achieved in scientific and technical prerequisites and production capacities which make it possible even without a significant economic risk to begin large-scale production of additives and oils and motor fuels that are modified with them. They do not sufficiently take into account the negative ecological consequences of an excessively timid approach to producing additives. One must take into account not only overcoming the harmful effects of fuel that is now being burned, but also the possibilities of having a favorable influence on the environment.

Large obstacles on the path to introducing this and other innovations are brought about by the inadequate adaptability of the economic mechanism to the stimulation of measures that are advantageous for the national economy as a whole. Situations in which the production of new products is concentrated in a branch which itself does not utilize these products in significant amounts and does not receive any additional advantages from rapid response to the needs of another branch which is obtaining an exceptionally great effect from it, require the most rapid resolution.

There are difficulties in calculating the economic effect from applying additives and expenditures on their production. Still it is clear that even the evaluated level of the effectiveness of fuel additives is adequate to make large-scale national economic decisions.

What Must Be Done to Accelerate the Production and Introduction of Additives?

For a complete evaluation of the prospects for development, experimental testing, production and extensive application of additives and the development of an effective system of immediate measures, in our opinion, it is necessary to do the following.

Through the efforts of involved ministries and departments, with assistance from the USSR Academy of Sciences and under the leadership of the State Committee for Science and Technology and the USSR Gosplan, it is necessary to develop a prognosis of the need for fuel and oil additives.

Relying on this prognosis, a special-purpose comprehensive program should be developed for the production and application of additives. Here it is necessary to single out the immediate measures for the time period up to 1990.

The high operational properties of fuels that have been modified with additives, their great economy and the possibility of avoiding ecological disturbances with products of combustion, and also the convincing foreign experience demonstrate the need to accelerate work for modernizing and expanding the production of fuel additives. This corresponds to the orientation toward intensive factors in the development of the economy.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

NEED FOR EXPANDING ROLE OF EVENING, CORRESPONDENCE COURSES VIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 6, Jun 83 (signed to press 29 April 1983) pp 63-98

[Article by S. P. Minakova, candidate of philosophical sciences, senior instructor, Leningrad Mining Institute imeni G. V. Plekhanov: "Correspondence and Evening Study: Way of Life and Social Effects"]

[Text] My neighbor, having had a good nap to the even hum of the engines suddenly discovered that almost half of the passengers on the aircraft were correspondence students flying from the transpolar Kirovsk to Leningrad for a class. "If I had my way," he declared, shaking off the remnants of his airplane sleep, "I would close down correspondence education! . . ."

Critical thinking is a part of us, but when criticizing school education, the system of material and technical supply or the sphere of services, nobody ever says that they should be closed down immediately, but there are many proponents of closing down correspondence and evening education. What has brought about this destructive, in the literal sense of the word, criticism?

I was taking to Leningrad a report from one of the socio-psychological research projects which had been conducted for 20 years in evening schools departments of the Leningrad Mining Institute in Kirovsk, and Monchegorsk (Murmansk Oblast), the Vorkuta evening branch of this institute and at industrial enterprises of Kirovsk and Apatity. In the report were responses to numerous questions that are raised by education without leave from production, problems, prospects, recommendations and ideas about the way of life of people who for 6 years have been evening and correspondence students. Whom do the evening and correspondence students "bother"?

It is natural for people sometimes to say one thing, to do something somewhat different and at the same time to strive for a third thing. Therefore I shall not conduct a questionnaire on the subject "your attitude toward evening and correspondence education," but we shall consider the actual state of affairs in this sphere.

The peculiarity of the activity of the working student consists in that it takes place within the framework of 3 social institutions: production, the family and the higher school. Difficulties arise when one of them begins to

demand an unlimited monopoly on the vital interests of the student, without taking into account his activity in other spheres. Moreover, the requirements on him in all three spheres can be so contradictory and incompatible, and criticism from them so impartial that in the end the student himself acquires a feeling of the second rate nature and illegitimacy of his own existence.

The family. According to data from our questionnaire 70 percent of the families of correspondence and evening students maintain a benevolent neutrality with respect to the student, 20 percent actively support him (especially if he lives with his parents), and 10 percent are dissatisfied and not without reason. In the first place, the working student transfers a large part of his domestic duties and the lion's share of worries related to educating children to the shoulders of his relatives. In the second place, training for one of the couple limits the possibilities of intra and interfamilial communication, joint recreation and diversions. In the third place, study during the evenings sometimes involves the family budget in a very sensitive way. Thus during a 40-day course the northern worker loses 300-400 rubles and more, and the course has an effect when obtaining vacation and extra wages.

The student's relations in production are even more complicated. He frequently sacrifices studies because of the irregular work of the enterprise, shift work, business trips and regular vacations that are granted during schooltime (for northern workers this vacation frequently involves travel to the south). It turns out that in 40 percent of the cases this is brought about not by a production need per se, but is a result of the "lack of desire of the administration to meet the student halfway." The training of a worker is in no way reflected in the fulfillment of the plan of the enterprise, and therefore as a student he is not needed in production. Unfortunately, some business people prefer the reliable labyrinth of the present to the horizons of the future. Pragmatism and utilitarianism make it possible to solve today's problems, but place limitations on the future.

"I need plowmen and not students!" a section chief of one of the transpolar mines summed up the situation. Therefore the correspondence student says: "You study for yourself!" For yourself means with some mysterious profit or career goal. On the questionnaires the evening students write: "You feel like a fool asking for the 2 days that are necessary to take an examination."

One should not be surprised that only one-fourth of the evening students we questioned enjoy the legitimate benefits of training leaves. Of these, 10 percent do not take training leave because they are not granted this opportunity in production, 12 percent "understand themselves that their work will have to be done by others" if they take advantage of this right, another 14 percent have academic indebtedness, 9 percent of the students do not wish to lose their earnings, 6 percent do without the training leave altogether and 23 percent take advantage of it only now and then.

And although worker training is not very expensive for production, they are unwilling to support it. To the question: "How do you encourage students in production?" 67 percent answered that they do not have advantages over those who are not in school.

A manager who does not understand why a worker studies and what advantage there is for the state cannot see why correspondence and evening education exist at all. As a result, in the applications of students there are brief resolutions with flourishes: "refused," "prohibited," "not permitted," and so forth. Since they are doing this "for themselves" let them suffer. This reduces the success rate and the quality of training, and increases the dropout rate. But these problems do not bother the master or the shop chief since they are the problems of another social institution.

The VUZ. The attitudes of the correspondence and evening student are most dramatic precisely in the VUZ. Having barely crossed the threshold of the institution, the correspondence student discovers that nobody needs him here and he is greatly to blame for the fact that he exists anyway. Not having obtained a dormitory room, because of student solidarity he forces his way into a student dormitory or moves into a private apartment. The unrealistic schedule of studies during the time of the course forces him to change over to "self-service": to make agreements with the teachers about laboratory work and examinations, to search for mislaid quizzes, and to constantly be in the role of a petitioner . . .

Such a strange attitude on the part of the VUZ can apparently be explained by the lack of understanding of the very idea of education without leave from production, a lack of understanding of its specific nature as compared to study with attendance at school. Evening and correspondence study have no image in the VUZ. Unfortunately, not only the programs and methods, but also the very organization of training in the evening division stubbornly and hopelessly imitates training work of the day division. The evening faculty completely ignores the activity of the student in other spheres.

The research showed that it is objectively impossible to completely eliminate the skipping of classes in the evening division. Only 2-3 percent of the evening students can organize their activity so as never to skip classes. The rest of them do not manage to do this because of shift work, irregular work, business trips and inefficient schedules. The schedule is drawn up in such a way that after a forced leave the student is deprived of the opportunity of easily entering into the training process. The specific condensation of classes (2-3 subjects during a month and a half) leads to a situation where if a student skips one evening he loses up to one-fourth of the lecture course. At the next class he sometimes cannot even understand what the teacher is talking about. "The lack of understanding gives rise either to irritation or sluggishness and apathy. Thus ignorance perpetuates itself"--we read in the questionnaires of evening students. In the library he cannot obtain an outline of the lecture he has missed, lesson plans do not exist for all subjects, there are no special textbooks, consultations are not held before classes, and questions from a student who has missed a class cause legitimate irritation on the part of the teacher. "I need students, not plowmen," such a teacher could say. The class notes of his comrades are not always helpful since in many disciplines the lectures are read "rapidly, indistinctly, incomprehensibly and monotonously, the lecturer is always writing something on the blackboard, never once looking at the audience," and "it is impossible to follow his train of thought."

Still the administration of the VUZ issues the strictest orders threatening "truancy" with expulsion. Without strengthening discipline at all, these orders make the authors satisfied (I did everything I could) and generate the universal conviction that there will be no order here anyway. And all because the only standard for order is the day form of training. For this reason the evening and correspondence forms are regarded as "artificial" and "second rate," and evening and correspondence students are regarded as importunate visitors.

Why Do People Study In The Evenings?

When you consider the obstacles that have to be surmounted by evening and correspondence students you cannot understand what force drives them away from their comfortable television screen, the pleasant inactivity after work, spectacles and diversions, and quite family life. And it is quite unclear (and research shows this) why graduates recall this time as the happiest in their life.

The traditional consideration of the motivation to obtain a higher education without leave from production does not explain very much. Basically the students regard education and the diploma as the highest value (97 percent of all the responses). Of these one-third wish "to be educated for self-respect," and others study because "their families demand this" (9 percent) or "all of their friends are studying in an institute" (6 percent).

Education means a professional future for 75 percent of those questioned. In particular this means the hope of obtaining more interesting creative work: "My work reminds me of the work of an automatic machine, and I wish to work creatively." In the opinion of 33 percent of those questioned, "Education is the best way of developing the intellect." "I feel forces in myself, but in order to feel internal unity and harmony it is necessary to have education." For the majority of them education provides an opportunity for intervening more actively in the production situation. Only 18 percent of those questioned are placed in the role of a rank-and-file engineer after completing the VUZ.

Of these students, 40 percent declared: "Let the work be difficult but it should be such that it embraces all of me and that I have extensive authority and the opportunity to influence the course of things." There are few people (5-6 percent) who hope to obtain a diploma simply to improve their material well-being and they are becoming fewer.

There are as many motivations as there are people: a laboratory worker who has obtained a diploma can improve his material abundance while it can only become worse for a drifter. For today's draftsman the job of a junior engineer can be attractive, but for an adjuster of the 6th category in a control and measurement instruments shop it has less content and interest . . .

The motivation for obtaining a higher education without leave from production depends on the sex, age, family situation, income, position occupied in the system of occupational activity, and other factors. Their diversity and contradictory nature will always serve as an argument both in favor of this

form of education and against it. Remaining at this traditional level, the dispute can continue endlessly. Moreover, by considering only the motivations we will hardly understand the reason for the surprising persistence of evening and correspondence students.

The Personality Searches For Rejuvenation

With all the variety and contradictoriness of motives, there is still something in common that lies at the basis of the desperate resolve of working people to continue their education.*

The life of an adult person is not a smooth process of increasing experience, knowledge, abilities, culture, morality and so forth. The development of the personality takes place through periodic renewal, and changes in their primary involvement in one of the many spheres of activity (work, daily life, family, rearing children, increasing education, various kinds of creativity, sports and so forth). The scientific worker has been attracted by an interesting theme and spends all of his free time on it without noticing anything around him, while his colleague has had a son and he is completely taken up with family concerns.

When investigating the personality in each given period we become convinced of its totality and persistence. The entire biography of a person is nothing other than the alternation of stable conditions, of qualitatively determined stages that are distinguished by the sphere of primary involvement, a certain hierarchy of motivations, orientations and interests, the unique structure of activity and the time budget, and the intensiveness of involvement--the tempo, rhythm, results and so forth.**

During the course of one stage the individual goes through 3 phases of development" "mastery," "plateau" and "bursting out or adaptation." The first phase is distinguished by a high degree of involvement, poor competence and large expenditures of energy. The "plateau" is the most fruitful phase, when minor things have been mastered and decisions are made in the most important cases. The third phase prepares for bursting out--a structural change in the personality. With a decline in the cognitive loads relating to mastering a situation the structure of the personality ages. Routine activity is not exciting and becomes uninteresting. Activity decreases. One wants to change his job. Hobbies appear. Unconditional selection in favor of the object of involvement becomes less and less rigid. Thus the structure of the personality loosens up, there is a restructuring, and the personality prepares for renewal. The loss of involvement, which produces a feeling of the fullness of life, leads to a feeling of emptiness, that one is unnecessary and that one has no future. The lack of awareness of these processes and the absence of social or economic conditions for renewing activity can lead to a prolonged crisis of the adult

*The motivation and behavior of people who enter an institute for evening or correspondence study immediately after high school constitute a special problem, and it will not be considered in this article.

**The problematic of the individual's life path as an alternation of various conditions was investigated by this author in conjunction with A. N. Alekseyev.

individual. In this case such negative qualities as demandingness, materialism and egoism find fruitful soil, as if they were growing wild.

Note that, although restructuring is experienced by the person as an active phase of life, in terms of content it is both positive and negative, and also dangerous for the society. When a person is depressed he can search for solace in diversions, frequently related to the consumption of alcohol, or in other spheres that are not approved by the society.

Evening and correspondence education constitute one of the most effective and socially purposive means of renewing the personality, a source of activity and a sphere of its positive realization.

For One's Self and For the Society

Having returned from the army, young people with a secondary education, as a rule, raise a family, rapidly master an occupation and end up in a condition of behavioral and psychological "underloading." Moreover, one should not forget that there is also labor (manual, conveyor, routine and so forth) for which youth can be compensated only by the prospects of continuing education and acquiring a new specialty.

"I am bored with pulling hoses and turning valves," this is the way the situation is summed up by one of the graduate students in the evening division. If at that moment the person had been offered another job or public work, the crisis would have been resolved by mastering new duties and relations, the work would have been renewed, and activity would have increased. But if not . . .

People arrange their destiny in various ways. Some decide to continue education and they are not mistaken. Having seated themselves behind a school desk again, they restore the lost feeling of youth, confidence in themselves and their capabilities, and they can see a future. Students draw an immense amount of energy and enthusiasm from this, which makes it possible for them to surmount endless difficulties and to stoically hold up in a difficult situation. In the questionnaires it was written that "a goal appears in life," "the attraction of something that has been started," "constant involvement with the new," "a feeling of the tension of life," "a broad circle of communication." This is why the graduates recall the time in school as a beautiful time of their lives.

Perhaps the senior master was right--does the working student study "for himself"? In fact this is a case where the good of the individual coincides with the good of the society.

Now when increased well-being is becoming more and more appreciable, we encounter the "paradox of satiety"--the inability of individual groups of the population to take advantage of the improving living conditions for self-development. The "paradox of satiety" leads to a situation where improvement of conditions frequently gives rise to consumerism, a philistine psychology and drunkenness, and leads to deterioration of the health. This too can end up in a prolonged crisis of the personality. It is necessary to be clearly aware that a merciless fight against drunkenness, violations of labor discipline and consumerism not only cannot be reduced to prohibitions alone, but essentially consists in providing

conditions for involving the personality in active positive work. It is important to expand the group of these occupations and surround them with an aura of prestige. One of them is combining work and study.

Research has confirmed that evening and correspondence students spend additional free time on studying, and what is left is mainly used for enriching the personality: reading, movies, conversation with friends. Paradoxical as it may be, people who combine work and study do not complain about a shortage of free time. Those who "grow tired and want to rest" are mainly those who are not striving for self-development and do not know how to handle their leisure.

Moreover, a special analysis of correlational links between individual concrete living self-evaluations of former evening and correspondence students with respect to various periods in their lives showed that during the period of study, as a rule, life was distinguished by its wholeness. All components of this sense of life are closely interconnected. A "sense of happiness" is derived from favorable life prospects, the realization of capacities and self-development. There are many people who have been happy in spite of the fact that their material needs have not been fully satisfied. Development and realization of capabilities --this is what brings a feeling of happiness.

For 5-10 years after obtaining a diploma there is a prevalence of a different type of sense of life with its unique "broken-off" structure. In its graphic depiction (relying on data from the corresponding correlations) one sees two relatively autonomous parts. In one, as before, the realization and development of capabilities are closely interrelated, and also a satisfaction of cultural needs. In the other satisfaction with the living situation as a whole and providing for an abundance of material needs are no less closely related. The happy person here turns out to be the one who most fully satisfies his material needs. Development and realization of capabilities recede to the background, ending up on the periphery of man's interest.*

The destinies of former evening and correspondence students takes a different form. Many occupy an imminent place in production and the administrative, party and economic staffs. For example, in Kirovsk during the past 15 years more than half of the higher engineering and administrative positions have been held by graduates of the evening division of the Leningrad Mining Institute, which was opened in the city in 1969 on the basis of the educational consultation point of the All-Union Correspondence Polytechnical Institute. Among them are chiefs of mines, factory directors, the secretary of the party committee of the Apatit association, the secretary of the gorkom, the chairman of the gorispolkom, and so forth. Dozens of candidates of sciences, and subsequently also doctors of sciences, have completed the institute without leave from production, living and working in Kirovsk.

Some graduates of evening and correspondence divisions first find themselves in a new job, but then within a couple of years again end up in a crisis situation of searching for enrichment of their activity. Some of them return to

*For more detail about this see Alekseyev, A. and Minakova, S., "The Way to Be Happy," NEVA, 1982, No 3, pp 177-181.

study (a second specialty) or look for active application in science (in-person or again correspondence graduate school).

This is not the place for a detailed discussion of the fates of graduates; one should only note that the socio-psychological strain remains in the same parameters: striving to enrich his activity, the individual does not always find understanding in the personnel system. Frequently the correspondence graduate student hears the phrase familiar from his student years: "You are studying for yourself!"

Any manager of an industrial subdivision knows that the mechanisms require periodic renewal, and technology needs the prospects of improvement. But far from all of them think about the fact that a person needs renewal and a future to no less a degree. But the careerograms which would take these factors into account are drawn up almost nowhere and in production there is no "specialist service" that is equivalent to the service of the head engineer. Because of this one feels increasingly strongly the need to develop a system of postgraduate education which would compensate for omissions in personnel work.

We have not investigated the problems of those who are unable to withstand the difficult conditions of correspondence and evening studies and finally abandon the institute. According to data published in the United States, workers with an incomplete secondary and incomplete higher education, like those who have low qualifications, are more inclined simply to earn a living and are oriented toward the family. Sources of satisfaction with life among these groups are frequently not related to the labor process. At the same time, among people who have begun to study in college but have not completed it there is a higher level of divorces than among people with higher and secondary education. People with higher education are the least likely to be divorced.*

It follows from this that the socio-psychological sphere of influence of correspondence and evening education is much wider than people usually imagine it to be, and it does not amount only to training a specialist. By depriving a working student in one way or another of the possibility of continuing education we can cause unrectifiable damage to his psychological health and thus to the health of the society. Students intuitively feel that having jumped into this "ocean," they will never be able to return to the former shore. Some of the dropouts retain the feeling of being damaged throughout their lives. Avoiding this, correspondence students strive to achieve their goals. Therefore we shall not create artificial obstacles on their path. The studies of a student who combines work and training are much more serious than they may appear at first glance.

The Guise of the Ugly Duckling

When recalling the social health and well-being of the society and the individual, it is necessary to recognize the important role of evening and correspondence higher education. The social institution exists and is needed. But

*SShA glazami amerikanskikh sotsiologov" [The United States Through the Eyes of American Sociologists], Moscow, 1982.

few are pleased by the way it functions today. We are not speaking about additional divisions, positions, staffs, space, equipment or other things which people usually discuss when justifying the need to strengthen and develop some subdivision, but about people, relations, the need to change the pitch of the tuning fork that sets the tone in the system of education without leave from production.

A key reason for the shortcomings in this system, in our opinion, is related to the fact that the total personality of the working student is lost from the field of vision. The latter is accepted "privately," only as a pupil, and it is assumed that he should be like a twin to the "real" day student, and work with him should imitate the work of the day division as much as possible.

In order to cast off the mask of the ugly duckling, unsuccessfully imitating the organization of the training process and the arrangement of the training and methodological work of the day division, the correspondence and evening division of the VUZ should use as the basic reference point for activity, in addition to achievement, the training plan, the dropout rate and so forth, the total personality of the working student, taking into account his behavioral direction and the specific features of his way of life. This conclusion is not a good wish, it can be reinforced with concrete recommendations. I shall give some of them with respect to the work of the evening division of the VUZ.

More attention should be devoted to feedback from the students. Questionnaires pertaining to the organization of the training process, teaching methods, the psychological climate in the institute, production and the family, the operation of transportation and public catering contribute to this. A wealth of information is provided by questionnaires of "former" students concerning the reasons for their dropping out. But the data that are obtained should not be a dead load; their utilization will make it possible to draw up better-quality work plans and study schedules.

The students must be given the opportunity to engage in studies after forced absences without fear of recrimination. To do this, various disciplines should be alternated throughout a single evening, and it is desirable to keep the schedule the same so that the students can plan their activity for the week. Outlines of lectures should be drawn up and made available to each student, and consultations should be organized before classes.

It is much more effective not to explain the reasons for absences, but to render assistance to students in eliminating them. Then there will no longer be a need for orders that numb the soul and threaten the students with punishment and dismissal. As was already said, dismissal from an institute frequently causes irreparable damage to the personality. It would be desirable for the Ministry of Higher and Secondary Specialized Education to permit the faculties to have, for instance, a 25-percent segment of students who because of objective factors advance through the classes less rapidly than the others. For them it would be possible to develop individual schedules and to extend the time in the VUZ up to 8 and more years. The elimination of unnecessary haste will improve the quality of the training of these specialists.

Special attention should be given to the socio-psychological climate in the VUZ. Up to 30 percent of the evening students (according to the author's calculations) skip classes because of the tactless attitude of the teachers. ("After all we are adults, and we have children of our own!") The personality of the teacher is a central aspect of the problem. The data from specialized investigations provide a basis for asserting that the success rate in school work is promoted most of all by such qualities of the teacher as kindliness, interest in his subject, the desire to help each student to master the knowledge (and we are not speaking about reducing demands), and a humane attitude (not becoming tangled up in spinelessness and excessive sympathy). Frequently the teachers simply do not attach importance to them since they do not know that it is precisely these qualities that contribute to instilling in the student feelings of joy in acquiring new knowledge. Students exert maximum efforts to avoid skipping classes with teachers who are able to work in this way.

As was already noted, the educational institution, the enterprise and the family sometimes place contradictory demands on the student. His personality becomes like Krylov's cart which is being pulled in various directions. But, as distinct from the cart, the personality is sensitive to these strains and is not always able to withstand them. It would seem that the VUZ should help the student to integrate his activity and preserve his wholeness. To do this it should extend beyond its own framework, influencing the attitude of society toward students in the system of correspondence and evening education, regarding it not only as a sphere of training specialists, but also as a source of renewing and developing the personality.

It would be good for the training institution to conclude comprehensive agreements with the enterprises at which the students work, which envision, in particular, the creation of more favorable conditions for their study, moral and material incentives for students, and the performance of course and diploma work on actual production subjects under the leadership of the leading production specialists. In keeping with these agreements the enterprise would be responsible for advancing the graduates in their jobs according to the qualifications they have acquired.

As research has shown, it is sufficient to keep at the center of attention not the "private" person (worker, spouse, future specialist), but the entire personality in order to reveal the possibilities of its development and enrichment through the accumulation of knowledge, skills, experience and impressions. To provide such opportunities in the modern stage is, perhaps, even more important than satisfying the material demands of the person.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

BENEFITS OF, OBSTACLES TO, EVENING AND CORRESPONDENCE COURSES

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian
No 6, Jun 83 (signed to press 29 April 1983) pp 80-91

[Article by I. G. Reznik, docent, Moscow Evening Metallurgical Institute:
"To Which Form of Education Should Preference Be Given"]

[Text] The first "nonschool university," whose charter envisioned evening and correspondence forms of higher education, was created in Novochoerkassk by A. V. Lunacharskiy and F. V. Lengnik. The main idea of the charter--the idea of self-education and self-development--still lies at the basis of the entire higher evening and correspondence school.

Of special significance for the establishment of a system of education without leave from production was the decree of the USSR Council of People's Commissars of 29 August 1938, "On Higher Correspondence Education," which envisioned introducing at all correspondence institutes a course system of training, mandatory examinations and reports for all disciplines, and the issuance of a diploma after the defense of the diploma project or the passing of state examinations. A unified list of specialties was established for the correspondence form of education. The students were granted additional paid vacations. Thus since 1938 correspondence education has been included in the overall system of training specialists with higher qualifications, and in 1939 it was also extended to training scientific and pedagogical personnel in graduate school.

Evening and correspondence education became a powerful and rapidly developing branch of the higher school which successfully resolved problems of augmenting the socialist national economy with skilled personnel. Day school training predominated up until the end of the 1950's. In 1950 its proportion in terms of the number of students amounted to 66 percent, and in terms of the number of admissions to VUZ's--65 percent. But even in 1960 the picture had changed: the proportion of the day form of training in terms of the number of students dropped to 48 percent, and in terms of admissions--to 44 percent. For the first time in the history of the country's higher education training without leave from production became the predominant form. The need to restructure, in my opinion, was dictated by the demographic situation that existed at that time, when the majority of able-bodied population were people who in terms of their age could comprise the main contingent of higher educational institutions. In 1959 their proportion of the population from 20 to 39 years of age in the overall number of able-bodied population reached almost 58 percent, and in 1970 it was 5 percent less.

Beginning in 1970 preference was again given to the day form of education. Its proportion in terms of the admissions in 1970 amounted to 55 percent, 1975—60 percent, and 1981—61 percent. This led to a reduction of the proportion of students who were studying without leave from production from 51 percent in 1970 to 43 percent in 1981.

The ratio between the form of training with leave and without leave from production in 1981 was 1.55:1, and in terms of graduations—1.75:1. This is hardly optimal for today. One comes to this conclusion by analyzing numerous factors, for example, the partial lack of correspondence between the needs of the national economy for specialists of a particular profile and their graduation, the economic irresponsibility of the people who hire specialists for their utilization, the high labor turnover of young specialists and, essentially, the complete impunity for refusing to work in production in the specialty that has been acquired. And there are still so many engineers who are working in positions that do not require a higher education! All this leads to the idea that the ratios among forms of training specialists, and primarily engineers, should be improved. In what direction? With the existing demographic situation, in my opinion, there is only one answer: only in favor of correspondence and evening education. A step has already been taken in this direction.

On 15 June 1981 the USSR Council of Ministers adopted the decree, "On Further Improvement of Training of Specialists With Higher and Secondary Specialized Education Without Leave From Production." It set the task of increasing by 1985 the admissions to VUZ's for education without leave from production by 5 percent (compared to the plan for admissions for the day form of education in 1981), while maintaining the overall annual admissions to these training institutions at the 1981 level. This will lead to a reduction in the proportion of admissions of students to the day form of training to 58 percent in 1985. Under the new five-year plan the admission of students to day divisions in 1982 and 1983 has been established at the level of the 1981 plan, that is, 638,000 people, and in 1984 and 1985 it is to be reduced by 32,000, with a corresponding increase in the admissions to evening and correspondence study. In order to further expand the training of specialists without leave from production, the councils of ministers of the union republics, the ministries and departments have been granted the right in 1982-1985, if necessary, to accept for training without leave from production 5 percent more students than envisioned by state assignments for admissions. This training will be financed through budget funds of the union republics or estimated payments of the ministries and departments.

The development of evening and correspondence education is also envisioned at training divisions under VUZ's. The admissions to them will gradually increase throughout the five-year plan (up to 50 percent). Graduates of these divisions will be able to enter both day and evening and correspondence higher educational institutions.

According to the author's calculations, by 1985 the ratio between graduates of VUZ's who have studied with leave from production and without it can be increased to 1.36:1, and in the near future, while maintaining the tendency earmarked by the decree and bringing it up to the optimal, in our opinion, it will be equal to 1:1. One has in mind the fact that day divisions of technical VUZ's should

be oriented mainly toward training specialists for work in academic and branch scientific research institutes, planning and design organizations, and research and planning subdivisions of enterprises (that is, they will train specialists "for development"), with on-the-job training in production, if necessary, for a year or a maximum of 2 years. As for specialists with higher qualifications "for production,"* the predominant form of training for them should be evening and correspondence education with an extensively developed system of divisions and branches. During the past decade the average annual absolute increase in certified engineers who are basically employed in production amounted to approximately 240,000 people, and scientific workers--45,000, and the growth rate of the former exceeded the growth rate of the latter 1.3-fold. These figures reflect to some degree the ratio between the needs of the national economy for workers with higher skills "for production" and "for development."

To what economic consequences will the expansion of the sphere of correspondence and evening education lead? Taking into account the fact that the plan for annual admissions to VUZ's is "frozen" and will remain at the 1981 level, the distribution of the contingent of students studying with leave and without leave from production in a ratio of 1:1 will make it possible to increase the labor force by approximately 400,000 people a year, and they will be able to produce more than 1.5 billion rubles' worth of national income annually. Moreover, one should keep in mind that in the process of training students in evening and correspondence VUZ's they increase their skills, and the effectiveness of their labor, according to specialists, increases by an average of 26 percent (the coefficient of reduction, which reflects the increase in the effectiveness of skilled labor as compared to unskilled labor, during the time of training increases to 2.3 as compared to 1.6 or 1.9 for students who have a secondary and secondary specialized education, respectively, before entering the institute).** This alone, according to the author's calculations, will today produce approximately 1.4 million rubles of additional national income. And on the whole improvement of higher education in the country will produce a national economic effect that exceeds 2 billion rubles.

Subsequent change in this ratio in favor of training without leave from production, as the history of the development of the higher school shows, would hardly be expedient since there could be a threat to the satisfaction of the needs of the national economy for specialists who will be working in the future.

There arises the question: Will the expansion of the sphere of correspondence and evening education not lead to a reduction of the level of fundamental training of personnel? There is the opinion that training without leave from production does not yet produce the level of knowledge of the day higher schools. Statistics confirm that the success rate of day school students is significantly higher than that of evening and correspondence students. Thus in the 1980/1981 school year 91 percent of the day school students passed examinations in all of the subjects, correspondence students--69 percent, and evening students--78

*Germaidze, G. Ye., Kharlamovich, G. D., "Toward a Diploma--In Stages," EKO, 1980, No 3, pp 83-89.

**Komarov, V. Ye., "The Economic Effectiveness of Education," VOPROSY EKONOMIKI, 1977, No 9, pp 55-65.

percent. The percentage of students who passed with "good" and "excellent" from the day form of education was more than twice as great as it was among evening students and 3.5 times as great as it was among correspondence students. The number of students who received only satisfactory evaluations was 3 times greater among correspondence and evening students than among students in day VUZ's (see Table). It is typical that by the end of the training the difference in the evaluations is not so great: the number of students who defended their diplomas with "excellent" and "good" in day VUZ's amounted to 42 percent as compared to 38 percent in evening and correspondence schools, and those who defended only with "satisfactory" were 10 and 16 percent, respectively.*

Table. Several Indicators of the Training of Students in USSR VUZ's in Various Forms of Education in 1980/1981 School Year

	Day Form	Correspondence Form	Evening Form
Student dropouts, thousands	113	132	73
% of overall number in day education	4	8	11
Eliminated because of poor progress, thousands	46	71	27
% of all eliminated	40	54	37
Students studying mainly with excellent and good grades, % of overall number in day form	41	12	19
"Permanent C students" who receive only "satisfactory" on examinations, % of all those obligated to take examinations	5	16	13
Students who have passed examinations in all subjects of the training plan, % of all those obligated to take examinations	91	69	78

But one should not forget that the initial level of knowledge of those who enter day VUZ's is, as a rule, higher. But those who study without leave from production basically have better justification for selecting a specialty, know production better, and the knowledge they receive is not abstract, but is refracted through the prism of its possible practical utilization. Moreover, of no less importance is the experience accumulated in labor and human communication in collective production, for it is precisely here that the young specialist who has come from the day VUZ frequently ends up to be quite

*BYULLETEN' MINISTERSTVA BYSSHEGO I SREDNEGO SPEISIAL'NOGO OBRAZOVANIYA SSSR, 1982, No 5, p 8

helpless. Former evening and correspondence students successfully bypass a fairly painful incubation period of entering into the actual production system and searching for their place in it.

Expansion of training without leave from production as a particular form of bringing the higher school closer to production while observing certain conditions increases its sensitivity and adaptive capacities to the changing needs of the national economy for specialists of a particular profile with a certain quantity and quality of training. Which conditions are we speaking about? I shall name several of them.

The quality of training of the specialist without leave from production depends to a considerable degree on whether or not the profile of his work corresponds to the selected specialty. Here one should not insist on complete correspondence between the student's working occupation and the specialty for which he is trained in the VUZ. For instance, a future economist (specialty--"economics and organization of the metallurgical industry") can work as a rolling mill operator, a crane operator, an employee of the division for technical control, a laboratory worker or, actually, in any other specialty of metallurgical production or in an organization that is directly related to metallurgy. In this case he will be able to assimilate the theoretical material more intelligently and one can expect a creative attitude toward labor from him. Unfortunately, this condition is not always observed.

In evening and correspondence VUZ's the dropout rate of students is great. While in the day divisions the dropout rate amounted to 12-13 percent of those who had been admitted to the institution, for evening and correspondence students taken together this figure was approximately twice as great. Moreover, for evening students it is equal to 32-34 percent, that is, every third student leaves the institution for one reason or another. In and of itself the dropout of students who have taken up the wrong field or are incapable of assimilating the program is, undoubtedly, a positive phenomenon.

But there is still much to be done to improve the quality of training of those who have remained in the institution and who will finally be given the diploma of an engineer. It is necessary to have a sufficient number of well equipped classrooms and work rooms with furniture that is convenient for studying (which is especially important for people who have come to the institute after a working day); laboratories with modern equipment in which each student (and not a group in which one is working while the others are only looking on) could work the necessary minimum of time; and teaching rooms that are conducive to creative labor and make it possible to conduct individual work with students. Many VUZ's have created such a material base, while others that are just as large only dream about it. Because of the shortage of classroom space it is necessary to rent schools, in which it is extremely difficult to utilize technical means of training.

With the evening and correspondence forms of training personnel, the success of the mater depends largely on the possibilities of working and communicating with each student. But the teachers in this sphere frequently lose track of their individual students among the large contingent of them. And this is no

wonder, for someone established at one time that 1 instructor in an evening VUZ should have 20 students, a correspondence VUZ--50 students, and a day VUZ--only 10 students. Hence it follows that with the same educational and other tasks, he can (as planned) devote half as much time to the evening student and one-fifth as much time to the correspondence student as the day student receives, even though the former, with a somewhat smaller volume of classes, requires much more individual work. The solution lies, on the one hand, in reducing the norms, and, on the other, enlisting more qualified professor and instructor personnel for training specialists without leave from production, first having increased the prestige of workers in this sphere.

There is no doubt that a good deal in this work depends on who stands behind the lectern in front of people who have come to the institute to obtain theoretical knowledge in addition to the practical knowledge they already have, and also on the fairly important circumstance that these people frequently work with the kind of modern equipment about which the institute can only dream. Therefore the teacher working with evening and correspondence students must not only have a perfect knowledge of the theory of the subject and the entire spectrum of didactic devices, but must also know production, its peculiarities, and simply have a great deal of experience in life. I am convinced that it is more difficult and no less interesting for an instructor in an evening or correspondence VUZ than it is for one in a day VUZ. One is surprised by the lack of desire of certain professors and docents to work with evening and correspondence students. Many think that this work is not as prestigious. In certain VUZ's that have evening and correspondence divisions, it has become a serious concern of the directors to overcome such negative tendencies.*

The shortage of textbooks, training aids and outlines of lectures cause serious harm to the quality of training. It is necessary to achieve complete provision of all, and not one, students with the necessary training and methodological documentation. Here one should in all ways stimulate the development of textbooks that take into account the specific nature of the system of education without leave from production, in particular, reducing the volume of the training load in specialized subjects by an average of 15-20 percent as compared to day training, and also the psycho-physiological peculiarities of the perception of the training material by working people, for whom classes in the institute for almost 6 years begin at a time when day students have been finished long ago. These textbooks should have a structure for the arrangement and presentation of the material which is different from the traditional one, they should maximally facilitate penetrating into the essence of the problem being studied, they should contribute to a fundamental strengthening of the understanding of key theoretical issues, and they should develop creative thinking. In my opinion, these requirements are satisfied by programmed textbooks which in no way push the fundamental textbooks on the subject into the background, but are only a kind of appendix to them.

*Azizkhanova, A. S., "Solving Essential Problems," VESTNIK VYSSHEY SHKOLY, 1980, No 5.

In order to increase the effectiveness of independent work, in addition to textbooks and elaborate outlines of lectures in the main disciplines, each correspondent and evening student needs qualified consultation assistance. It is not easy to provide this, but it is necessary to strive for it. We are still far from adequately utilizing the possibilities of television and audio-visual aids with the basic training information and information about the logical structure of the course and algorithms for analyzing and solving problems on real production subjects.

Today it is quite obvious that there is a need to change the training plans for working students. We should revise the ratio in the training classes between general scientific, general engineering and special disciplines, based primarily on the need to strengthen fundamental preparation and create in the students a total interconnected system of knowledge which would make it possible for them to perform engineering functions with greater return. The time allotted in technical VUZ's for studying special disciplines decreases from year to year (for metallurgists during the past 20 years--by approximately 40 percent).^{*} The VUZ councils themselves should establish the list of disciplines that determine the special training of students, taking into account regional and branch peculiarities and the production profile. They should be granted such rights. It would be expedient to select from the program those subjects which, because of their specific features, are difficult to study independently and at home, and to which an extremely small number of hours are devoted in classes and training sessions. In the end it is now the case that these subjects only appear to have been mastered.

It has long been time to begin to consider seriously the ever increasing proportion of students of evening and correspondence institutes who have a secondary specialized education and, consequently, completely satisfactory training, particularly in general engineering disciplines. In recent years technicians entering our evening metallurgical institute comprised an average of 36-38 percent. Why should they be taught, for instance, as much engineering drawing as those who do not have a secondary specialized education? It would be expedient to form sloughs of student technicians who study according to special training plans with a reduced training period. The decree of the USSR Council of Ministers of 15 June 1981 envisions clarifying the time periods for correspondence and evening study, reducing them in individual specialties, taking into account previous training, tenure and the nature of the work.

Now a good deal is being said and written about the prestige of the engineer and increasing the effectiveness of his labor. Ideas are expressed about periodic recertification of engineering personnel in various categories, classes and so forth. I think that a person should have to demonstrate his right to be an engineer only once in his life when defending his diploma project, and from the results of training in the institute. But still one should give the right to state examination commissions to confer the qualifications not only of an engineer, but also of a technician, if the student's knowledge does not correspond to modern requirements placed on an engineer. The issuance of the diploma

^{*}Yefimenko, G. G., "Toward New Goals," VESTNIK VYSSHEY SHKOLY, 1981, No 2.

of a technician should in no way incriminate the institute; on the contrary, granting the diploma of an engineer to a person who does not deserve it should be regarded as directly harmful to the society. Moreover, in evening and correspondence VUZ's it would be expedient to organize groups of students in individual specialties where there is a shortage so that they can study according to programs of tekhnikums. The formation of these groups could be carried out both through special selection and from VUZ students who have not demonstrated the capability of obtaining a higher education. I am confident that in both cases there would be a sharp increase in the responsibility of the students for the results of training and, correspondingly, also in the success rate.

It is time to take a good look at the possibilities of introducing a system of state distribution of specialists who have been educated without leave from production, having granted certain privileges and responsibilities for them as is the case for those who have completed day educational institutions. More attention should be devoted to utilizing the graduates of evening and correspondence educational institutions in keeping with their qualifications.

These and many other questions of improving the training of specialists with higher and secondary specialized education without leave from production were considered at a conference that was held in November 1981 in Moscow. Participating in it were officials of the CPSU Central Committee, the USSR Council of Ministers, the USSR Gosplan, the ministries of higher and specialized education of the USSR and the union republics, directors of enterprises and managers of VUZ's--a total of 630 people. The corresponding recommendations were adopted, which revised many points which had long evoked justifiable criticism.*

Having approved the results of the conference, the board of the USSR Ministry of Higher and Specialized Education has instructed the administrative agencies for higher and secondary specialized educational institutions to take its recommendations into account in their practical activity. There is the hope that the quality of training of specialists without leave from production will improve.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

CONTINUED EVENING, CORRESPONDENCE COURSEWORK REQUIRES FINANCIAL SUPPORT

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian
No 6, Jun 83 (signed to press 29 April 1983) pp 91-95

[Article by A. G. Yur'yev, chief of the technical division of the biochemical plant (Rasskazovo, Tambov Oblast): "The Motivation Would Be Mutual"]

[Text] Sixth classmen A, when he came to the last session, brought a copy of his labor book as is required. An inquiry for verification at the enterprise brought the disheartening answer: he had never worked there. What should be done? Expel him? But put yourself in the situation of the dean's office: this student has studied free of charge for 7 years. A "Solomon" decision was made: to give A an annual vacation so that he could go to work in his specialty, if only to get a rough idea of what it is all about, and then a year later he would return to the class.

Evening and correspondence education is only for workers. This is the law. I presented an extreme case from the life of one institute. But there are still so many students who manage to work in an area that is extremely remote from their selected specialty, and the VUZ sometimes closes its eyes to this, for otherwise it would be necessary to expel too many of them. And the salesman continues to stand behind the counter and the seamstress works at her sewing machine, although both are studying in the electrical equipment department . . .

In the overall mass of correspondence and evening students one notices that the real production workers separate themselves out, those who are interested in acquiring the knowledge they lack and not simply obtaining a higher education. It has long been time to single out such interested people for training without leave from production.

How is this to be done? The practice of concluding long-term agreements between the VUZ and the corresponding enterprises has proved to be good.* Each enterprise selects the most suitable "candidates for specialties": the ones who themselves are interested in training and in whom the enterprise is also interested . . . in particular, it is known that most of the specialists in the plant are managers of the middle level: masters, section chiefs, electricians, mechanics and so forth. Personnel work among them frequently involves

*Andryushchenko, A., "How to Train an Engineer," PRAVDA, 17 August 1979.

serious difficulties. "In the 'Apatit' association," wrote its director, G. A. Golovanov, "when a questionnaire was distributed only one-fourth of the large group of masters with a higher education answered that they would like to occupy a higher management position."* One of the reasons is that the young specialist in the institute has not received the necessary knowledge of the socio-psychological fundamentals of administration and pedagogy, and he has no personal experience working with people. "There is another path to training management personnel--correspondence education of workers and technicians who already have experience in production and life," continues G. A. Golovanov. "Mistakes are rarely made when appointing such workers to a management position. But, in my opinion, their theoretical knowledge is somewhat less than that of graduates of day VUZ's. Therefore among engineers who have completed a higher educational institution through correspondence in our association there are practically no managers of scientific, technical and planning services, but many managers of basic production subdivisions were correspondence students at one time. And they work with a great return." Thus, on the basis of its personnel policy, the enterprise should determine who should be sent to the correspondence or evening VUZ. But when it sends them it takes on the responsibility of advancing the worker up the service ladder in keeping with the specialty he has acquired.

And the VUZ? At first it should make sure that there are enough future graduate students with the specialties of the enterprises to fulfill the plan for recruitment if one exists. The selected "candidate-specialists" are prepared by instructors of the VUZ for the forthcoming training, say, for a year (that is, the present training courses are given a new status). Having the results of this preparation (training), it is perhaps reasonable to refrain from entrance examinations for evening and correspondence students altogether. For they have undergone double preliminary selection. And there are now so many bittersweet stories involving entrance examinations for adults . . .

Thus in the evening or correspondent institute those studying (even if it is a somewhat smaller number) will be a contingent of those people who really want this, are sufficiently prepared and have fairly specific prospects after graduation. And subsequently the higher educational institution should arrange studies in such a way that the link with concrete production is not broken.

The training plans and programs for training without leave from production have been drawn up with the assumption that the correspondence student receives approximately 70 percent of his knowledge in the process of independent study, and the evening student--about 50 percent. The main method of training the correspondence student is to give them quizzes. The quality and promptness with which they are taken guarantee a paid trip to the institute and other benefits. But do quizzes always fulfill their purpose--to check on the independently required knowledge of the student or prepare him for the future examination? If the current condition of quizzes in general educational disciplines are satisfactory on the whole, this says nothing about special subjects. Many of them

*Golovanov, G. A., "Zapiski direktora" [*A Director's Notes*], Moscow, "Ekonomika," 1981, pp 43-44.

are taken mechanically: a selected algorithm for the solution is given and it is enough to substitute figures of the particular variant, to draw a graph according to the model--and that is all. Conventional figures are frequently used. It is not interesting for the student to carry out these assignments. The correspondence student is a person who is working with more specific views about life than the student who attends class. The latter, as long as he is studying, is more of a romantic, while the former is a realist. The practitioner is skeptical about theory. He knows that most frequently a transportation problem is solved not by the method of the northwestern angle, but by the persistence and consideration of the supplier.

The specific features of the correspondence form of education require such assignments whose fulfillment requires an analysis of the activity of the enterprise or organization where the student is working. And the more individual the assignments, the better they are. The results of their fulfillment should be used first of all to evaluate the quality of independent work and knowledge of the correspondence student.

I shall give an example from my own experience. I fulfilled course work on scientific organization of labor using figures from the shop in which I worked. Of course I did not obtain any outstanding conclusions, but I managed to understand the conditions of labor in the shop more deeply. I also spent a good deal of time on my diploma project in which I evaluated the economic effectiveness of an installation for purifying wastewaters that was under construction at the plant. Freedom from the need for approval and coordination enabled me to calculate the effect on the basis of three different premises and the corresponding formulas for calculation. And immediately after completing the institute, now as part of my job, I was required to determine the economic effectiveness of one of the stages of this technology. The work caused no difficulties and was accepted practically without any remarks.

Frequently "sympathetic" instructors reduce the demands on the level of knowledge of their students, understanding that the activity of their perception is essentially less after a working day. It also happens that instructors spend several hours attentively discussing with students the correctness of the writing, say, of the report on prediploma practical work (introduction, conclusion, headings, bibliography, charts and tables--all for the future diploma), and they devote considerably less time to the content. Of course, it is not documents that are written there, but . . . "be attentive to form"--such instructors implore. For the higher commissions, when summing up annual verifications, also rely to a greater extent on form.

It has long been time to streamline the deadlines and forms for intersession quizzes, and to improve the quality of the review of assignments carried out independently by the students, and also the level of requirements on reports and examinations. More examinations should be conducted in written form and the oral examination should be heard by commissions consisting of several instructors. Moreover, it is necessary to increase the material responsibility of the rectors for the organization and quality of the tests, course and state examinations, and defenses of diploma projects.

There are many complaints about the level of the material and technical base of the higher educational institutions.

Correspondence students, sometimes no longer young, burdened with family concerns and a long list of necessary purchases, and certainly not in the best of health, come to a large city, frequently the capital, not for one or two, but for 20-40 days. Private apartments located throughout the entire city, dormitories where the lights are turned out at midnight (and this for people whose children who are already preparing to go to the institute), dining rooms about which it is better not to be reminded. . . . 8-10 hours of lectures each day filled with seminar and laboratory sessions are supposed to be compensated for by normal life, which should be at least no less comfortable than that of day students in attendance.

The eternal reservations: where will the money come from? For the state budget is not limitless. And here, in my opinion, comprehensive agreements between the training institutions and the enterprises where the students work should be of assistance. It is necessary to bring in more capital investments from the corresponding branches, including into the plans for the development of enterprises, for the construction and expansion of educational buildings, laboratories and dormitories.

Let me sum up. The "benefit" of education without leave from production is obtained only when the enterprise is interested in the future specialist no less than the specialist is interested in obtaining a diploma and self-assertion. And this goal must be pursued when restructuring the organization and methods of the training process. Otherwise we shall continue at length to deceive ourselves with figures about the graduation of second- and third-rate specialists.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

CHARTS DETAIL INCREASING SHIFT TO EVENING, CORRESPONDENCE COURSES

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 6, Jun 83 (signed to press 29 April 1983) pp 96-98

[Charts: "Correspondence and Evening Education in the USSR and Other CEMA Countries"]

Figure 1. Number of Students and Trainees in VUZ's and Secondary Specialized Training Institutions in the USSR at the Beginning of the School Year, Thousands

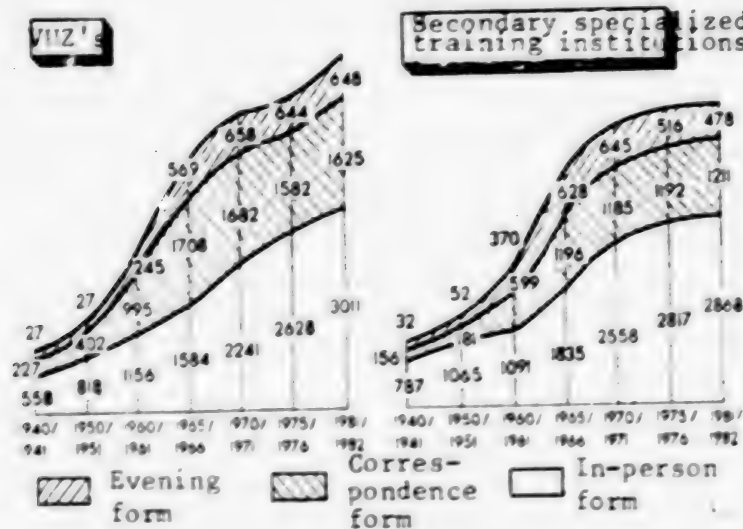


Figure 2. Proportion of Students and Trainees of Higher and Secondary Specialized Training Institutions in the Overall Number of Workers and Employees in the USSR National Economy, % of Total

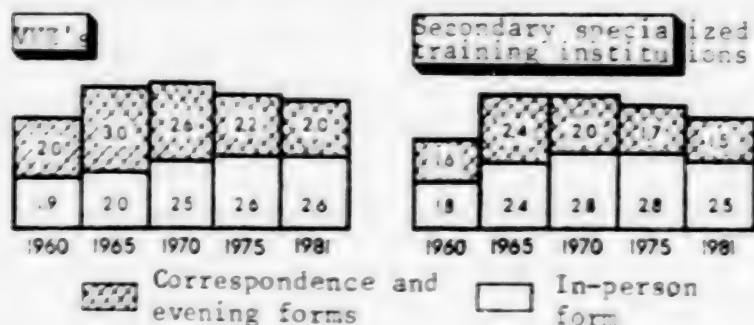


Figure 3. Admissions to UVZ's and Graduation of Specialists From Them in USSR, Thousands

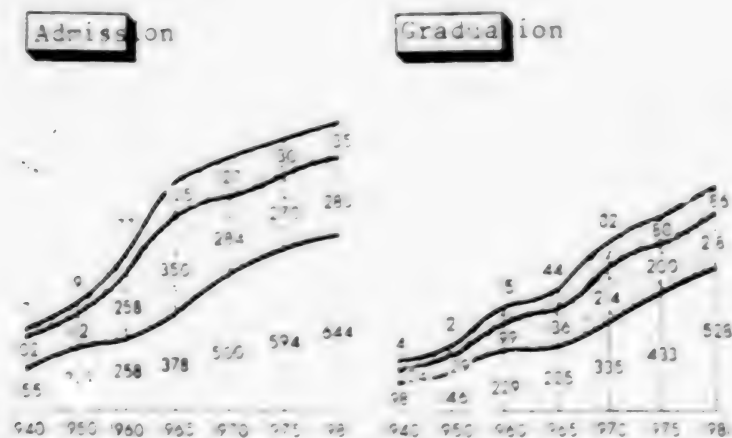


Figure 4. Admissions to Secondary Specialized Training Institutions and Graduation of Specialists From Them in USSR, Thousands

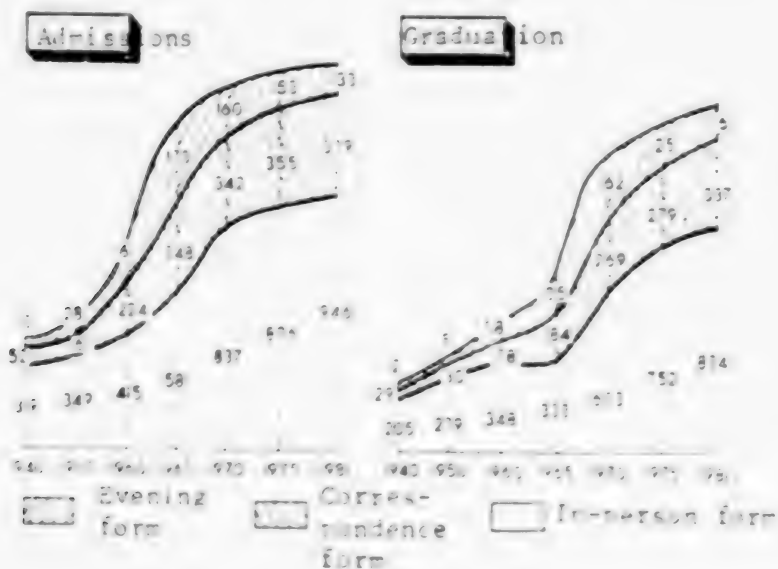
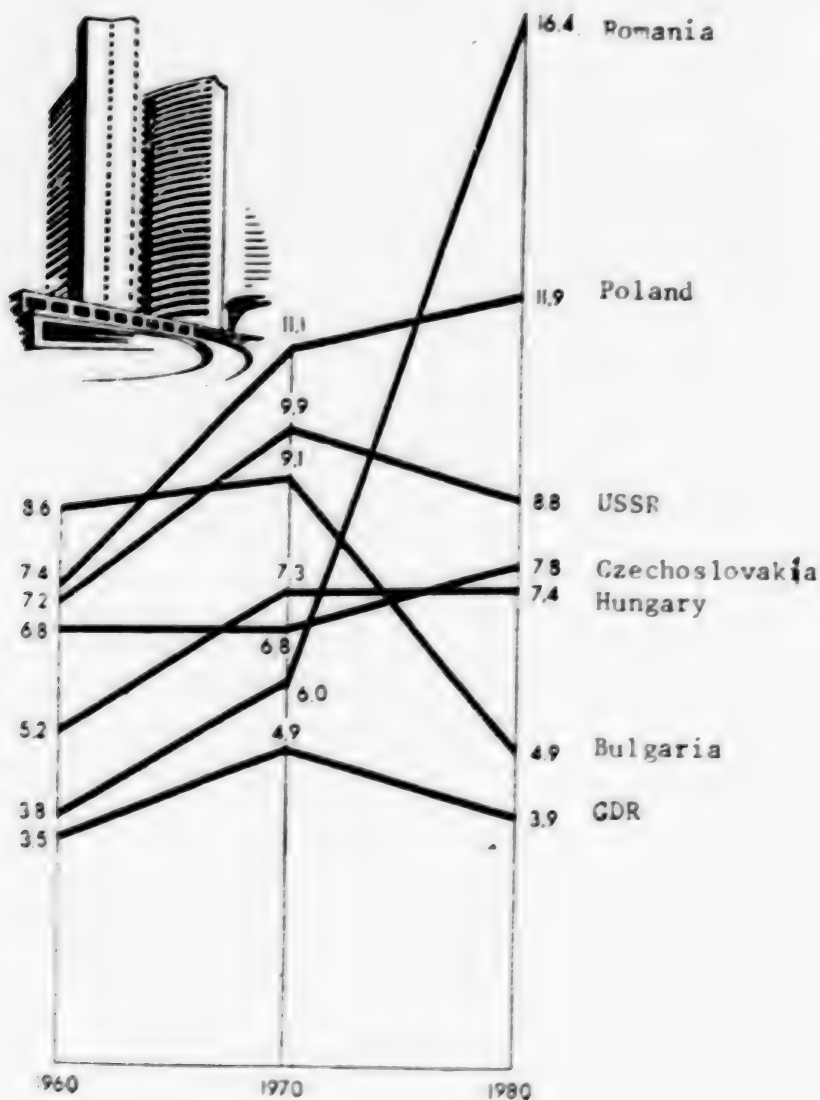


Figure 5. Proportion of Students and Trainees in Higher and Secondary Specialized Training Institutions in All Forms of Training in the Overall Number of Workers and Employees in the National Economies of the CEMA Countries, % of Total



COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

SELECTIONS FROM GASTEV'S THESES PUBLISHED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian
No 6, Jun 83 (signed to press 29 April 1983) pp 110-112

[Article: "Training of Labor Force in Reconstruction Period" (1927), excerpts
from A. K. Gastev's theses]

[Text] 1. The training of the labor force should be recognized as the most
important of the most important economic tasks, as a problem of creating the
live energy resources of the Soviet Union.

2. It should be given the same serious attention in the system of the Soviet
economy as the problem of electrification or the problem of creating mechanical
energy resources.

... 7. The period of reconstruction cannot be interpreted as a simple
expansion of capital construction or an expansion of the scale of production,
but precisely as an organizational and technical restructuring of production,
as its rejuvenation; in exactly the same way the training of the labor force
during this period can not be regarded as a problem of simple reproduction of
the labor force, but precisely as a problem of renewing the labor force.

8. In light of this interpretation of the training of the labor force, one
should consider it to be the most important or even the greatest factor in
reconstruction--the live expression of this reconstruction.

9. In practice this means that the training of the labor force during the
period of reconstruction should resolve the following problems:

- a) open acceptance of the labor force in the efficiency work of the enterprise
- b) arming this labor force within particular limits with the methods of
efficiency experts;
- c) the live creative participation of this labor force in efficiency work;
- d) the staffing of this labor force with production organizers who are
dispersed throughout the enterprise.

. . . 13. The methods of the Central Institute of Labor, which originated in the struggle against old primitive methods of training (manifestations of pure reproduction of the available labor force) . . . have grown into a developed system of instilling organizational and production skills, and then general organizational and production behavior of the worker during the period of reconstruction of production.

. . . 21. The conditions for the labor and recreation make the working day so compact that it consists of only 2 variables:

1) regulated labor and 2) regulated recreation, which destroys the third variable which is widespread in production (and training), the so-called "dawdling" that is, disorderly recreation, under the guise of work, which disintegrates production and the worker.

. . . 71. Agencies for training labor force will become not only a school for working adolescents who wish to acquire skills, but also that part of the enterprise which hires labor force for the most active participation in the new situation at the enterprise and which gives production the necessary live forces for bold experiments in the area of labor organization as well.

. . . 93. While in no way denying the significance of the culture of the labor force in the development of its productivity, it is necessary to get rid of certain common confused ideas in this area, and when training various types of workers with various skills it is necessary to give preference to particular disciplines that are singled out as supplementary to the production and theoretical qualifications.

. . . 128. Instead of insisting on having children in schools, it is necessary to follow the slogan of making the proletariat younger, and also gradually crowding out the people in declining years who are more sluggish in questions of reorganizing production.

. . . 133. It is necessary to exert the greatest caution in attracting female labor, at all times determining the need for this from the nature of production and the nature of the given region.

. . . 171. The mastery by agencies for training labor force of efficiency functions in production and the functions of renewing the labor contingent will cause a revolution in the attitude toward them on the part of economic planning agencies. They will be just as necessary as capital construction and the work for restructuring production.

172. And then in the planning construct (control figures, hypothesis and general plans) they will not speak about "labor" within one page, but about training agencies--in several lines.

173. The training of the labor force will then come into its own in the general tasks of creating renewed human resources for socialist industry.

Works by A. K. Gastev on labor organization:

"Industrial'nyy mir" [The Industrial World], Kharkov, 1919.

"Nashi zadachi" [Our Tasks], Moscow, 1982.

"Vosstaniye kul'tury" [The Insurrection of Culture], Kharkov, 1923.

"Professional'nyye soyuzy i organizatsiya truda" [Trade Unions and the Organization of Labor], Leningrad, 1924.

"Novaya kul'turnaya ustanovka" [The New Cultural Setting], Moscow, 1924.

"Ustanovka proizvodstva metodom TsITa" [The Arrangement of Production by the Method of the Central Institute of Labor], Moscow, Gosizdat, 1927.

"Normirovaniye i organizatsiya truda" [Norm Setting and Organization of Labor], Moscow, Knitoizd-vo VTsSPS, 1929.

"Metodologicheskiye predposylki razrabotki, obosnovaniya i klassifikatsii standartov" [Methodological Prerequisites for the Development, Substantiation and Classification of Standards], Moscow, Standartgiz, 1933.

"Poeziya rabochego udara" [The Poetry of the Labor Attack], Moscow, "Khudozhestvennaya literatura," 1971.

"Kak nado rabotat" [How to Work], "Ekonomika," 1972.

"Trudovyye ustanovki" [Labor Situations], Moscow, "Ekonomika," 1973.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

PRINCIPLES OF CELL BIOLOGY AS MODEL FOR ECONOMY

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian
No 6, Jun 83 (signed to press 29 April 1983) pp 113-126

[Article by R. I. Salganik, corresponding member of the USSR Academy of Sciences, deputy director of the Institute of Cytology and Genetics of the Siberian Branch of the USSR Academy of Sciences (Novosibirsk): "The 'Economy' of the Living Cell"]

[Text] The problem of controlling the national economy is interesting not only to economists. One of the leading molecular geneticists of our country thinks that specialists in administration would be interested in learning how this control is exercised within the living cell.

Every researcher inevitably comes up against economic problems, even if he does not really want to. When one plans a new scientific program, problems of equipment, reagents and financing immediately come to the surface. When one tries to introduce his scientific brainchild, the group of economic problems sharply expands: manufacturers, raw material, production cost, demand . . . but for other reasons as well many people in recent years have been more and interested in economics.

Economists model various economic situations intensively and, as far as I can judge, successfully enough. At the same time their attention is not directed to actually existing models of extremely complex processes which have been created by nature herself as a result of the selection of the optimal variants, a selection which has continued for hundreds of millions of years. It seems to me that the knowledge of these processes can be useful for economists as well.

We know of attempts to compare the cell with an industrial enterprise. Here is what is written in the work by the American biophysicists, G. Gamov and M. Ichas, published a quarter of a century ago: "We should like to compare the cell to a large plant. The nucleus of the cell plays the role of the administrative office, where leadership is provided, and the chromosomes play the role of those premises where all of the blueprints, copies and production plans are stored.

"Then the cytoplasm is nothing other than the shops with workers and machines that produce products. These products are, of course, ferments that catalyze various biochemical reactions. If something happens to the information contained in the chromosome, the activity of the corresponding ferment is disturbed.

"... The workers in the plant do not begin to go to the management office asking what to do just as the manager himself does not go to the plant in order to instruct each worker individually. To do this there are masters or foremen who receive information from the office of the manager and transmit it to the workers. In the cell the role of the masters is played by the RNA (ribonucleic acid) molecules.

"The RNA is synthesized in the nucleus with the help of the DNA and receives a number of instructions from the DNA. Then the RNA molecules are transferred to the cytoplasm and included in the so-called microsomes (rooms of the shop masters) where protein synthesis takes place."*

If one considers the living cell individually, one can speak of an autonomous organism. But if the cell belongs to a multicellular organism, this is a federation of subsystems which involve specialization and division of labor, multifaceted ties and almost ideal cooperation. It is clear that the analogy with economic systems is quite arbitrary here and a literal transfer of biological principles to the economy of a society would be incorrect. But there is probably something instructive in biological systems.

Let us try to consider certain principles for the arrangement of the living cell and the organization of the processes from standpoints which can interest economists. The object of consideration will be the idealized cell, all of whose parameters are averaged, and the description of whose structures and processes are maximally simplified.

Standardization of "Parts"

Let us begin with the question of what the cell is made of. One might say that the main building materials for any cell are polymers. Let us recall that any polymer consists of monomers. Thus polyethylene is a product of polymerization of ethylene. A multitude of ethylene molecules, joined together, form a gigantic linear molecule. If ethylene is gas, polyethylene can be a liquid, viscous or solid substance, depending on the number of monomers that constitute it and on the length of the molecule. If one were to label the ethylene molecule with the letter "E" the polyethylene molecule would be a monotonous combination of letters, like "E-E-E-E-E . . ." which can be regarded as a cry expressing whatever you wish: vexation or mistrust, depending on its length and intonation. . . . true, the possibility of transmitting information with such a homogeneous sequence of sounds is quite limited. It is another matter if words can be compiled from a multitude of various sounds and polymers can be constructed from various monomers.

*Gamov, G. and Ichas, M. "Model of the Functioning of the Cell in the book: "Mekhanizm nasledovaniya" [The Mechanism of Inheritance], Leningrad, 1966.

It turns out that the main construction materials of the cell--proteins (polypeptides)--are linear polymers which include 20 types of standard monomers--amino acids. Such biological polymers consist of an average of 300-600 monomers each. Continuing the linguistic analogy, let us say that there are short proteins: "words" of 3 sound-amino acids, and giants that consist of 1,000 and more "sounds." The rearrangement of 20 amino acids in the average polypeptide with a length of 500 monomers produces an astronomical amount of 20^{500} variants of polymers! The replacement of even one sound can, as we know, lead to a change in the meaning and the appearance of a new word. The same thing can be said about proteins.

This simple, and at the same time unusually productive, principle provides for practically all of the diversity of the manifestations of life on our planet. Every living thing--from amoebas to elephants, from flu viruses to man--have as one of the major materials of its composition these protein polymers which are distinguished only by the alternation of monomer-amino acids. The 20 standard amino acids are a universal alphabet of all life on our planet which again and again points out that we self-confident homo sapients are only a part of planetary life and we are fully dependent on it.

An array of many thousands of various biological structures are produced from the 20 standard amino acids. Such structures are, for example, biological catalyzers of chemical reactions in the living cell--ferments. The basis of any ferment is a polypeptide with the alternation of amino acids that is typical for it. Each ferment is most frequently specialized for the performance of one type of chemical reaction, but it performs them with immense effectiveness--up to several millions of operations per minute. There are more than a thousand different types of catalyzers in each cell. All of them are constructed from 20 standard parts, amino acids, which are gathered together in various sequences. From the same amino acids the array of highly effective polymers are produced--transformers of energy (chemical to mechanical, light to electric, and so forth), and protective proteins--antibodies and interferons which defend us from bacteria and viruses. Many regulators of cell processes--protein hormones--are constructed on the same principle.

These structures are broken down when they are no longer needed or when they become irreparable right down to the initial monomers--the amino acids, which can immediately be reassembled in new combinations and form new structures that are necessary at the given moment: new catalyzers--ferments or other biological machines. This high standardization of parts and the universality of their interchangeability can be envied by any branch of modern technology.

Other construction parts of biological structures are also unified. Genetic programs for everything living on our planet are written with 4 signs--nucleotides. Combinations of the 4 nucleotides in threes produce 64 genetic symbols which constitute the alphabet of the code for inheritance. Each of the trios codes one of the 20 amino acids or designates the beginning or the interval and the readout. Thus polymers of nucleic acids program the assembly of polymers from amino acids.

The molecules are also standard for various types of living cells. They serve as sources of energy, a kind of fuel. It is mainly glucose and fatty acids that are directly oxidized. Oxidation is a complete analogue to combustion. But biological oxidation takes place in stages with the release of part of the energy in the form of heat (without smoke or fire) and the transformation of the rest of the energy of chemical bonds of glucose and fatty acid into the energy of the bonds of the universal biological accumulator of energy --adenosine triphosphate (abbreviation--ATP).

The cells and the organisms as a whole constantly maintain reserve supplies of "fuel" in the very compact form of polymerized glucose--in the form of glycogen in the cells of animals and in the form of starch in plants. The form of storage of animal acids are fats, where they are joined to glycerin molecules.

The organisms include cells that specialize in storing fuel supplies--glycogen, starch or fats. The specialized cells deliver standard fuel--glucose or fatty acids--to all the other cells of the organism. This is one of the numerous examples of cooperation of cellular systems in the supersystem of the organism.

At the "working sites" of the cells and in the intercellular environment of the organization there is always an optimal supply of standard "parts"--amino acids, nucleotides, glucose and so forth. Extensive expenditure of one of these leads to its being rapidly augmented in the sphere through release from the reserve. The constant concentration of standard "spare" parts and energy substances is maintained automatically, through feedback.

Feedback

The principle of feedback is obviously important for any economic system, and it pervades the cell economy through and through. Vertical and horizontal feedback systems combine and coordinate all the biochemical and energy processes that constitute the basis of life.

We have spoken above about the biological catalyzers of chemical reactions in the cells--ferments. But a ferment is not only a highly specialized and effective catalyzer. In essence it is a catalytic machine with starters and stoppers, and gauges which react to the quantity and quality of raw material, to the quantity of the final product and to signals from related "productions." The group of ferments engaged in sequential transformations of the initial substance ("raw material" or "fuel") constitute a kind of conveyor. The polyferment conveyor is constructed in such a way that the products are easily transported from one unit to another.

These conveyors are controlled extremely effectively through feedback. Frequently 10-15 sequentially operating ferments are employed on the conveyor. If at the end of the conveyor there is a surplus of final product, it holds up the operation of the first ferment unit and thus blocks the work of the entire conveyor. The ferment frequently has "gauges" which perceive the signals from a number of parallel conveyors if these conveyors are participating in one production (it is difficult to find another word) process. A ferment recognizes its substrate with high precision and, as a rule, will not accept violations of

the standard. The hierarchy of the controlling structures is provided by continuously incoming precise information which causes them to make new decisions and give signals for execution.

The highest controlling center in the living organism is the brain, which processes information coming in from the external world and from various systems of the organism. The feeling of hunger causes us to look for food. But the feeling of hunger is a reaction to information that comes in from the cells.

When the concentration of glucose in the blood drops, the control center sends out a chemical center, a hormone, which activates ferments in the cells which break glycogen down into glucose and separate fatty acids from fats. This chemical signal is a trigger; it knows its cell, the object which it is to control, and turns on in it a cascade of amplifiers which multiply the signal and send it to millions of molecules of ferments that specialize in the breakdown of glycogen, putting them into action. When the supplies of glucose in the cells and in the blood are augmented, the center receives information about this and sends out a hormone signal and the alarm is turned off. Conversely, a surplus of glucose coming in, for example, with food, brings about another hormonal signal which gives the command to the cells to store up glucose and accumulate it for future use in the form of glycogen.

This entire complex regulation of processes is carried out automatically. Our brain makes only the most important general decisions: to find resources of food substances, and to determine the condition for constant provision of them.

We could not exist if we had to think about the fate of each of 10^{15} cells in our organism, of each of the ferment conveyors operating in it, about supplying the cells with the entire gigantic list of chemical substances which the organism synthesizes or takes from the external environment. Fortunately, our brain is free of these concerns. We entrust this to relatively autonomous peripheral structures and automated systems with ramified feedback systems and a system of reliable information, without which precise control would be impossible.

A Library of the Most Frequently Used Programs

The genetic apparatus of even the modest bacterial cells--such, for example, as the *Escherichia coli*--contains several thousands of genes that are discrete blocks of information. Each human cell contains several hundreds of thousands of genes. The genetic programs are realized over the course of the individual life of the cell and, through copying, they are transmitted to the posterity of these cells (organisms). Each gene is a discrete section of a linear DNA molecule, which programs one of the working instruments of the cell--the already familiar protein polymers, ferments, energy transformers, and protective and signal polypeptides.

We have spoken about the fact that the order of the monomers--nucleotides in the DNA molecule--determine the order of the alternation of amino acids in the linear protein molecule. The distribution of several hundreds of amino acids

of 10 types in the protein polymer determines its properties and its purpose. If there are only several thousand of these discrete blocks of information (genes) in the cell, a number of questions arise. Are all these blocks of programs being realized constantly or is there selectivity and periodicity in their readout? What kind of set of blocks exists in these programs? What determines it?

An investigation of the content of the programs show that they provide for the life of the cell and the stability of the cellular "economics" system in various situations, but only those that are most frequently encountered. For example, the genetic programs of the *Escherichia coli* provide for its life through the most widespread sources of energy. The rooting source of its energy is glucose. Correspondingly, the bacterial cell has a program for synthesizing ferments which break down and oxidize glucose. At the same time there are sets of genetic programs for drawing energy from other widespread, but considerably more rarely encountered or less accessible sources: for oxidizing lactose, galactose, arabinose and amino acids. There are no programs for gathering ferments that are capable of transforming substances that are rich in energy but are not found in nature (for example, for oxidizing the polymers of polypropylene, polystyrene and others that are created by man). Thus it becomes obvious that in the process of evolution genetic programs have been created which have provided for the survival not in all chemical and physical conditions of the environment, but only in those that are most frequently encountered.

The readout of the genetic program requires energy expenditures. From the large library of gene-programs which are permanently located in the DNA molecules, only certain blocks of information are read out. A simultaneous readout of all of these programs would rapidly lead the cell to economic collapse. In each given moment the cell realizes only part of the programs which are adequate to a given chemical and physical (in our today's interpretation--"economic") situation in the cell and the cellular environment. What "higher reason" makes it possible for the cell to adequately turn on only the necessary programs? This "higher reason" is made up of automatic feedback devices. The appearance of milk sugar instead of glucose in an environment where bacteria live automatically turns on the block of the genetic program which codes ferments that transform milk sugar into the necessary organic compounds. All working elements of this automated system are well known today, and even a "reasonable" reaction by a lonely bacterial cell causes no mystical troubling anymore.

The section of the DNA that corresponds to the gene contains a number of nucleotide sequences which designate the beginning and the end of the readout, and which regulate the proteins that turn on and the proteins that turn off the reading of the gene. The proteins that turn on and the proteins that turn off sense an external chemical signal and transmit it to the corresponding section of the gene. This is achieved by automatic regulation of the work of the gene and the reaction to the change in the chemical environment of the cell.

Structures that are more complicated, but similar in principle, have been isolated in the genetic apparatus of higher animals, including man. The automatic sequential turning on of large blocks of genetic information (groups of

genes) provide for ontogenesis: the development of the entire organism from one fertilized cell. As we can see, in the genetic apparatus the principle of automated control and the availability of reliable feedback provide for a high level of autonomy in carrying out the tasks of sustaining life.

Destruction of Inoperative Structures or "Down With the Do-Nothings!"

There are disassembly devices operating in the cells. If a ferment is functioning, when it is in a working condition, as a rule, it is protected from the disassembly structures. Ferments that have been inactive for a long time are recognized by these structures and broken down into their constituent standard monomers, from which, in keeping with prepared programs, it is possible to rapidly assemble another ferment that is necessary at the given moment or another functional protein.

Frequently there are 2 or more similar ferments to perform one and the same chemical job. It turns out that one of the variants of this ferment (isoferment) provides for constant routine work during relatively calm periods of the life of the cell. This isoferment is resistant to the disassembly mechanisms.

When an emergency situation arises and in special circumstances when it is necessary to perform many times more work than usual, in keeping with special "blueprints" a special isoferment is constructed. On an alarm signal the "emergency" genes are included in the readout. It turns out that such an "emergency" isoferment is not only assembled rapidly, but is also disassembled immediately after the period of busy activity ends. The peculiarity of the "emergency" isoferment is its high sensitivity and accessibility to disassembly devices of the cell, which are capable of recognizing it and rapidly breaking it down into universal monomers.

Certain cells and even entire multicellular organs in a complex organism are needed temporarily, only during particular periods of life. When there is no longer a need for them they are also broken down into a multitude of various standard monomers, which are transferred to other cells to be utilized: they serve for assembling ferments that are more needed at a given moment, energy transformers and regulators.

If a ferment has been assembled incorrectly, it is difficult for it to recognize the substance it is to transform, and it works poorly, it is disassembled considerably more rapidly than a "correct," fully functioning ferment. But, perhaps, it is more advantageous to repair such an unsuccessful catalytic machine than to "disassemble" it?

No, a cell, as a rule, does not engage in the repair of mass produced items. Moreover, it carefully traces the absence of mistakes in the "blueprints" and in the matrices of the nucleic acids from which it assembles the working structures of the cell.

There is a special system for control and correction of genetic programs. Special ferments are placed along the DNA matrices in search of mistakes; they reveal them and, in the majority of cases, immediately eliminate them, cutting

off the mistaken fragments of DNA and replacing them with correct ones. In a 2-thread DNA molecule the threads are complementary. A mistake with the greatest probability takes place only in one of the two threads (the probability of the appearance of 2 mistakes in strictly opposed sections of the two threads is negligible). Therefore there remains the possibility of correctly restoring the erroneous section of DNA from the remaining complimentary parallel thread.

Nonetheless there are still mistakes in genetic programs. If physical factors (cosmic radiation) or chemical factors of the environment affect it intensively, the restorative structures do not manage to cope, and the number of mistakes increases.

These mistakes (changes in the DNA) most frequently lead to inherited changes of indicators, mutations, and the appearance of defective ferments, hormones and other devices. Frequently these mistakes are incompatible with the life of the cell. The defective cells or organisms do not hold up under the competition with the healthy, full-value cells and organisms, and they die. Only in the rarest of cases are there desirable mistakes, which lead to the appearance of improved variants of ferments and other cellular mechanisms. These cells (organisms) obtain advantages and are assimilated through selection. The probability of surviving and producing equally successful offspring is higher in them than in their ordinary fellow cells. The appearance of successful mutations is one of the mechanisms of evolution.

The Creation of New "Planning Documentation"

The multitude of ready selected genetic programs in the cells provides for development, the path from the fertilized ovule to the organism and adequate reaction to changes in the external environment, which make it possible to survive. But if principally new living conditions appear, the cell must create new genetic programs.

One of the important ways of creating new programs (in addition to mutations) is a recombination process, in which new programs appear as a result of new combinations of already operating blocks of genetic information. There are several cellular mechanisms which provide for recombinations of the blocks of genes or individual genes and sections of them. The sexual process, for example, serves to recombine genes. One of the ways of changing the genetic programs is to increase the number of one of the already existing genes (amplification); increasing the number of these genes leads to a qualitatively new property of the cell. The genes of animals, plants and unicellular organisms, whose cells have nuclei, are constructed differently from bacterial genes. These genes are broken down into blocks. A recombination of the blocks of genes can lead to a rapid appearance of new genes. Recently properties were discovered which transfer entire genes or fragments of them into the genetic apparatus of the cell.

But the creation of principally new genes takes place slowly, through mutations --selection and replacement of individual "letters" in the already existing genetic writing (most frequently in amplified genes). This path takes tens and hundreds of thousands of years in order to create a new genetic recording this way (the time for processes of evolution are not absurdly long).

Today researchers have already managed not only to read the genetic tapes created by nature, but also to reproduce them. We have entered a new era in the history of natural science and the material culture of human society--the era of synthesis of genes. So far we have learned to synthesize--reproduce and copy--already existing natural genetic programs.

But we have come close to designing principally new genetic programs. This possibility will be based on a clarification of the functions of individual combinations of amino acids, their significance in the spatial distribution, and on a knowledge of the genetic code. In this stage nature, through the minds and hands of man, will sharply accelerate the rate of evolution of life on earth.

Having completed this excursion, the author would like to emphasize that he is not calling for a translation of all principles of life supports that have been developed by nature into the economy of the human society. This is impossible if only because the economy of the society includes more than standard technical structures and materials: machine tools, sets of equipment and conveyors which can be combined into new productions or materials. Man with his complex social interconnections is the main figure in public production.

The economy of the human society can develop effectively only by taking human psychology into account.

The selection of goals and stimuli which will create a high motivation for effectiveness of production should have in mind both material needs and man's need for self-expression and creative activity, which has received the greatest development in man.

Nonetheless the author thinks it extremely useful to study the "biological economy" that has been created by nature. Standardization and unification of elements of design and production units, the optimal selection of operatively replaceable programs, the rapid disclosure and elimination of inoperative or ineffectively operating structures, the high saturation with feedback on the basis of objective and complete information, the autonomy of peripheral structures while retaining centralized control, and many other things which reliably serve the living cell--all this taken together can be of interest to economists as a model of an unusually effective and reliably operating system.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

NEED TO ESTABLISH COMMISSION TO ELIMINATE WATER POLLUTION

Novosibirsk *EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA* in Russian No 6, Jun 83 (signed to press April 1983) pp 127-134

[Article by Yu. P. Belichenko, candidate of technical sciences, Main Administration for Protection of Water of the USSR Ministry of Land Reclamation and Water Resources (Moscow), and I. N. Karaban, candidate of technical sciences, Ukrainian Scientific Research and Planning Institute of Munciple Enterprises (Kharkov): "A Valuable Resource--Water!"

[Text] The Basic Directions for the Economic and Social Development of the USSR During 1981-1985 and the Period Up To 1990 raises among other problems the task of developing and introducing waste-free systems of water utilization at enterprises.

At the present time USSR industry consumes many hundreds of millions of cubic meters of freshwater each year. Seventy percent of the volume of discharged wastewaters are industrial wastes and purification installations must be constructed to decontaminate them.

Reuse and Repeated Utilization--This Is The Main Path

Protection of the rivers from pollution is based on the principle of observance in given section lines of water basins the maximum permissible concentration of harmful substances, beyond which the water is unsuitable for utilization. Here the main attention is devoted to purifying wastewaters before they are discharged into the water basins. But let us note that the absolute majority of expedient technological processes for decontaminating wastewaters provide for removing at best 90-95 percent of the organic substances and 20-40 percent of the inorganic compounds. This leads to a situation where in the places of discharge of water ecologically unfavorable zones are formed. Moreover, the increase in production and, consequently, the increased wastes require an ever greater quantity of freshwater for dilution.

The prognosis for the development of the economic activity of all countries of the world up to the year 2000 shows that if the quality of wastewaters after purification remains at today's level it will be necessary to use all of the water resources, including the world ocean, for diluting wastewaters. Consequently, we can no longer follow the path of exclusively extensive

utilization of water resources. A more radical solution to the problem is to create and introduce waste-free systems of water supply and waste-free technological processes. But in this connection there arises the question of new criteria for evaluating equipment and technological processes.

While today technical and economic factors are decisive in determining the degree of progressiveness of technology, tomorrow a third and no less important factor should come to the fore--ecological. A number of industries already have considerable achievements in improving technology in the interests of protecting the environment. But one must state that on the whole the problem is not being developed quickly enough. Here one must understand that mass replacement of existing technology with waste-free technology will require capital investments. Therefore it is obvious that in the next 2 or 3 decades the majority of enterprises will utilize a large quantity of water as they have in the past.

Under these conditions it becomes immensely significant to develop and extensively introduce waste-free systems of water supply for industrial enterprises (or, as they are called, closed water management systems) wherein the water is utilized in production two or more times, without purification or after the appropriate purification--systems that preclude the discharge of wastewaters into the water basins.

The application of waste-free systems of water supply when planning facilities of the chemical, petrochemical, petroleum processing, pulp and paper and other branches of industry will make it possible to locate these enterprises in regions which have limited water resources but have other favorable economic and geographical conditions for the development of productive forces. Such an engineering-ecological area for the development of water management is the most promising. One can judge this from the specific example of the Verkh-Isetskiy metallurgical plant in Sverdlovsk.

There Are Concerned and Thrifty Ones!

In the 1960's it was decided to construct at the Verkh-Isetskiy plant a complex for rolling transformer steel. The new production required the annual expenditure of more than one-third of the water resources consumed by industry in Sverdlovsk. There was a serious threat of polluting the pond that was the source of water supply for the industrial center.

How can one introduce the complex in such a way as to avoid damage to nature? At the plant they organized one of the first laboratories in ferrous metallurgy for purifying industrial wastes, which was equipped with a good experimental industrial base. The large amount of work conducted in it made it possible to determine the optimal parameters for planning water protection installations, including purification of individual kinds of wastewaters and dehydration of precipitants. Work procedures were established for all installations for waste-free water management.

In the complex of this shop they have already constructed and are operating systems for purifying 9 kinds of wastewater. All of them are processed according to technological schemata and are then returned to production. The processes are automated.

In the Verkh-Isetskiy system of waste-free water management, for the first time in domestic practice in order to salvage saline water they used an evaporation installation with the return of the distillate to the circulation cycle and the removal of the dissolved salts in the form of a dry residual. The utilization of the evaporation installation instead of an accumulator pond produced an economic effect of 300,000 rubles a year and made it possible to save 228 hectares of land. The economic effect of the system amounts to 1.35 million rubles a year--these are the direct results of its operation. To this one must add the national economic effect brought about by preventing pollution and exhaustion of the Verkh-Isetskiy pond, and also the social effect which cannot be simply calculated.

The example of the Verkh-Isetskiy metallurgical plant is not the only one. One can name systems that were introduced at the Syoyarvi and Lvov cardboard factories, the Chinkent porcelain factory, the Lisichansk and Kremenchug petroleum processing plants, the Akmyane cement and tile combine, the Minsk state bearing plant No 11, the points for preparing passenger trains of the Nikolayevka station of the Moscow Railroad, and so forth.

In the petroleum processing industry 6 plants located in regions of the country with little water operate without discharging it into the bodies of water. Wastewaters containing organic compounds, after mechanical and biological purification, are completely utilized again, and the corrosion of the equipment and pipelines is reduced by 24 percent, and the formation of incrustations--by 68 percent.

The creation of a system of waste-free water supply at the Volga Automotive Plant made it possible to avoid expanding the existing system of water supply and sewerage. The introduction of the waste-free system in 1978 produced a savings of 10 million rubles' worth of capital investments. Each year 10 million kilowatt-hours of electric energy are saved.

Today it is important to eliminate the departmental approach when operating water management structures, because of which considerable amounts of fixed capital are utilized inefficiently. Special attention should be given to the creation of waste-free systems of water management at large industrial systems. By completely eliminating discharges into bodies of water of domestic-household, industrial and polluted rainwaters and by reducing the expenditure of freshwater, these systems provide for more efficient distribution of water resources of the regions and they take into account the interests and the capabilities of the enterprises and productions.

The construction and assimilation of a closed system of water management for the village of Pervomayskiy in the basin of the Northern Donetsk River is being completed. The volume of repeatedly utilized water in the industrial water circulation amounts to 97 percent. From the production wastes they will annually obtain many thousands of tons of disinfectants, 5,000 tons of plastic slabs, and 10,000 tons of nitrogen fertilizers worth a sum of more than 3 million rubles. The savings of freshwater in the Pervomayskiy industrial center will amount to 44.1 million cubic meters a year. This is immensely important under the conditions of the shortage of water resources in the Northern Donetsk basin.

The Verkhnedneprovsk mining and metallurgical combine has introduced a practically waste-free system of recycled water supply. All industrial wastewaters from this combine (conventionally pure, polluted and rainwater) goes through local purification and completion of purification in sediment ponds, and is returned for utilization in the industrial water supply. A total of 300,000 cubic meters of water are in circulation each day. Industrial wastes from this combine, municipal services and other enterprises pass through biological purification and completion of purification in aerator ponds, and they are also returned to feed the recycled water supply systems. The economic effect from introducing the water supply system in the industrial center and utilizing purified city wastewaters in it amounts to about 500,000 rubles a year. Thus no wastewaters from the city at all are discharged into the Dnepr.

There Are Examples, But Not Many

The significance of the systems that have already been created goes far beyond the framework of local decisions. Their operation convincingly demonstrates that the necessary scientific and technical prerequisites exist for a comprehensive solution to the problem of protecting natural waters. The experience that has been accumulated shows a radical path to protecting the water environment, and it teaches what to do and how to do it in order to avoid a belated feeling of guilt before nature and posterity.

Unfortunately, this progressive principle of organizing industrial water supply has not yet become widespread.

In March 1983 the newspaper PRAVDA printed an editorial entitled "Protect the Purity of the Water" which says directly: "In a number of regions of the country the water has become raw material that is in short supply." The organ of the CPSU Central Committee critically raised the question of extensive development of waste-free technologies.

Planners frequently prefer to travel the trodden path and include in plans for new enterprises outdated systems of water supply with the discharge of wastewaters into the bodies of water. "The protection of the environment is a nationwide cause. It is the duty of the ministries and departments to step up the attention paid to preventing pollution of the bodies of water. A special role here should be played by the ministries of the chemical industry, chemical and petroleum machine building, instrument building, and means of automation and control systems." (PRAVDA)

We think that it would be expedient to include in the subsection "Efficient Utilization and Protection of Water Resources" of the section "Protection of Nature" of the national economic five-year plan for the country's economic and social development concrete assignments for the corresponding ministries and departments for creating waste-free systems of water supply.

Science should also be called to account. Branch scientific research institutes and laboratories are working mainly on improving methods of purifying wastewaters before they are discharged into the bodies of water. In our opinion, it is necessary to step up activity in the development of methods of preparing wastewaters for repeated utilization in production without discharging them.

Here attention should be devoted to certain special issues that have not arisen previously when natural water was used. These include the requirement on the quality of purified wastewaters (a guarantee of their epidemiological and toxic safety), on the reliability of the operation of circulating systems, on the stabilization of the processing of recirculated water, and so forth.

"The application of mineral fertilizers and chemical means of fighting against pests and weeds on the fields is increasing. The high content of nitrogen and potassium in rain and snow water that seep from the fields leads, in particular, to a situation where the bodies of water are beginning to 'bloom'--algae develop rapidly in the summer here." (PRAVDA)

It should be noted that up to this point there are no unionwide normative documents that regulate the policy for planning, construction and operation of waste-free systems of water supply for enterprises.

The introduction of waste-free systems of water utilization is also being impeded to a considerable degree by the lack of the necessary quantity of reagents, coagulants, highly efficient nontoxic inhibitors, installations for desalinization of water and several other kinds of equipment. This is also noted in PRAVDA: "So far the application of waste-free methods of production is impeded because of the shortage of chemical reagents for purification, highly effective corrosion inhibitors, and methods and equipment for processing precipitants and desalinization, as well as instruments for checking on the quality of the water."

The total productivity of installations for desalinization of water that are in operation in the country is not great. This can lead to an increase in salt discharges into bodies of water and their increased mineralization. Only the USSR Gosplan can reveal the need of industrial ministries for various types of desalinization installations and ion exchange filters, and take measures to sharply increase their output.

Or take the production of equipment for air cooling. The need for it in industrial ministries and departments is being satisfied by less than half by plants of the Ministry of Chemical Machine Building. The equipment is used mainly for newly constructed facilities, and, as a rule, it is not used for existing facilities that are being constructed: planners, blaming the shortage, are unwilling to include air cooling equipment in the plants. For these reasons they have practically not begun to introduce them in such water-intensive branches of industry as ferrous and nonferrous metallurgy, machine building, the pulp and paper industry, the food industry and the meat and dairy industry.

Taking into account the fact that the need for air cooling equipment and also desalinization installations is increasing, the Ministry of Chemical Machine Building and other involved ministries should envision the expansion of existing capacities and the construction of new enterprises in order to sharply increase the output of this equipment. It is apparently necessary to organize deliveries of it from the CEMA countries for the time being.

Since 1 January 1982 the USSR has introduced payment for water that is taken by industry from water management systems. In this connection it is necessary to develop methods for evaluating the economic effect from thrifty utilization of it. We need special programs for electronic computers which would help to produce rapid calculations for optimizing waste-free systems for operating industrial enterprises and centers.

"A good deal of money is being allotted for protection measures and the construction of purification installations. And it is quite inadmissible for them not to operate at full capacity because of violations of the rules for their operation, their unsatisfactory technical condition, or the shortage of service personnel." (PRAVDA)

The importance of the problem makes it necessary to create under the USSR State Committee for Science and Technology an interdepartmental commission which would engage in solving all problems related to the development and introduction of waste-free systems of water supply.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

READERS RESPOND TO ARTICLE ON URBAN TRANSPORTATION SYSTEMS

Novosibirsk *EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA* in Russian No 6, Jun 83 (signed to press 29 April 1983) pp 135-139

[Responses to article by Yu. N. Lachinov, "Urban Passenger Transportation: Organization, Financing, Khozraschet," *EKO*, 1982, No 7, for referent article see JPRS 82400, 7 December 1982, No 1032 of this series, pp 133-138]

[Text] Planned Losses or Guaranteed Profitability?

[Article by V. N. Bugromenko, candidate of geographical sciences, Pacific Ocean Institute of Geography of the Far Eastern Scientific Center of the USSR Academy of Sciences (Vladivostok)]

A person who is even slightly familiar with the state of affairs in urban passenger transportation (GPT) cannot remain indifferent to the proposals advanced in the article by Yu. N. Lachinov (the transfer of GTP mainly to "maintenance" by enterprises and organizations located in the city, in proportion to the number of workers, the abolition of individual payment for transportation, and the creation of a unified administrative agency for GTP).

In spite of the numerous articles and even large-scale discussions, which continue to abound, with the course of time the urgency of creating normal conditions for urban passenger transportation (and, consequently, also conditions for traveling to work and back) is not decreasing at all.

With a conductor, without a conductor, the noncash method (with punch cards) . . . how much farther will the spiral of search in the organization of urban passenger transportation go? The managers of automotive fleets and streetcar-trolley administrations (TTU) must have an inexhaustible imagination. Especially the TTU, whose losses are planned annually. For example, in 1981 in the Vladivostok streetcar and trolley administration they planned losses in the amount of 1.66 million rubles. The collective worked well, and the losses amounted to "only" 1.65 rubles, for which they received a bonus. And this is with 86 percent regularity of the traffic!

In our country the absolute majority of streetcar and trolley administrations and passenger automotive enterprises are unprofitable. And how can there be profitability if immense efforts are expended on chasing "rainbows"?! In one

year in Vladivostok about 7,800 people in electric transportation were catching them. "A drop in the bucket of rainbows!" said a streetcar operator I know. Thus they returned 7,800 rubles to the state, but the wage fund of the controllers alone amounted to more than 25,000 rubles. Let us add to this the entire apparatus for "control over conscience": the cost of printing the tickets and the paper for them, the cost of cashier equipment and ticket punchers, expenditures involved in the installation, repair and wage fund for the cashiers, technicians and so forth--and it runs up to a rough sum which, according to calculations of the deputy chief of the VITU for operations, L. A. Kozlova, of about 120,000 rubles a year. Not enough? Let us add to this the removal of drivers from their usual functions (repairing the ticket belts and so forth), and the rejection of public control (in Vladivostok alone for this "measure" the working time of up to 50 people and more is mobilized daily). And the nerves? How does one evaluate the "profitability" of the nervous system of passengers (and I will not even speak about the poor controllers)?

The progressive nature of the system proposed by Yu. N. Lachinov consists in that it looks to the future and corresponds to the principles of educating a new man. With the existing system we "oppose" the state (passenger--cashier), and with the new system this "opposition" is considerably reduced. The "rainbows" will die, and the "quiet contempt" for them and also the irritation with the controllers will disappear--and we will all become somewhat closer to one another. Herein lies the meaning of the economic reforms under socialism: they should contribute to educating a new man.

But still one can already find opponents of the new system. Among them might be . . . urban transportation organizations. The fact is that its introduction will force them to change over to a new system of planning. Now bonuses and other benefits of streetcar and trolley administrations and automotive administrations depend on the level of income and the fulfillment of plans in terms of this. With the new system, when the income will be guaranteed, something else will be the main criterion: the regularity of traffic, the comfort, the number of complaints and so forth, that is, the planning will be oriented more toward the interests of the passengers.

On the other hand, local authorities will have to devote more attention to urban transportation. Now the passenger can still punish the streetcar and trolley administration simply by not paying for the trip. With the new system, when they are operating poorly, the TITU and the automotive enterprises will not be economically penalized. Therefore it will be necessary to increase state sanctions for the failure by the enterprises to fulfill the planned indicators for passenger transportation.

---An End---

[Article by V. A. Didenko, chief of the streetcar and trolley administration
[overlapped]]

The suggestions for improving the administration of urban passenger transportation made in the article by Yu. N. Lachinov seem attractive to me. The existing system inevitably leads to losses, to holding back the initiative of the

managers, and to uneconomical expenditure of funds. It is not oriented toward final results and does not focus on the interests of the passengers. The better we strive to work, the more fully we satisfy the needs of the population for transportation, the worse the present indicators are.

The losses of urban transportation in Sverdlovsk are now increasing because of the following reasons:

the introduction of comfortable new streetcars of the T-3 type, which have a top price of 55,000 rubles and require large operational expenditures as compared to the old types of cars (MTV-82--17,000 rubles);

the increased wholesale prices for materials, electric power, fuel and lubricants;

the increase in the average distance of the trips of passengers, which is related to the resettlement of residents from the central part of the city into the new residential areas. The average distance of a trip on a streetcar is now 3.2 kilometers, and on a trolley--3.5 kilometers;

the increased sale of discount tickets for school children, people studying in secondary specialized training institutions and students.

According to the plan for 1982 our urban administration's income amounts to 11.3 million rubles, expenditures--16.1 million rubles, and losses--4,821,000 rubles.

The change in the system of payment as suggested in the article by Yu. N. Lashinov and the elimination of the division for collecting earnings would produce a total savings of 789,000 rubles in Sverdlovsk, including as a result of:

the wages of the cashiers, junior salesmen and controllers--292,000 rubles;

bonuses for drivers for overfulfillment of the earnings plans--248,000 rubles;

additional payments to drivers for working without cashiers (2 percent of the overall sum of earnings from the sale of subscription and trip tickets)--149,000 rubles;

the manufacture of subscription cards and trip tickets--28,000 rubles;

the maintenance, servicing and repair of buildings--12,000 rubles;

the maintenance of Gosbank cashier's offices--12,000 rubles, and so forth.

Further, 500,000 rubles will be saved by the elimination of the division for collecting earnings and by the voluntary payment of the subscription fees.

Relieving drivers of the work of selling subscriptions and trip tickets will contribute to increasing the regularity of movement, to a reduction of the number of road transportation accidents, and to an elimination of conflict situations between the passengers and the drivers, and it will advance the culture of service in transportation and create a better production attitude for workers of the city.

Providing incentives for drivers and other workers of the TTU can be made dependent on the efficiency of the operation on the lines and on the satisfaction of the passengers with the quantity and quality of trips, and the automated system of dispatcher control of electric transportation in Sverdlovsk will contribute to a correct evaluation of the work of the enterprise and the drivers.

I also agree with the idea that all urban passenger transportation should be placed under the jurisdiction of the gorispolkoms of the soviets of people's deputies. This will make it possible to concentrate it in the hands of the administration of the transportation system alone, to solve problems more specifically and efficiently, and to eliminate the many stages in planning.

Transportation Utopia

[Article by A. S. Yakimov, economist of the plant for reinforced concrete pipes, Bendery]

Yu. N. Lachinov correctly noted the reason which "impedes the development of khozraschet relations and does not direct the transportation workers toward maximum satisfaction of the needs of the population." This is the fact that the transportation is provided at a loss. He also said that the primary cause for the losses is the stability of the payments for passage, regardless of factors that make these trips more expensive.

Yu. N. Lachinov's suggestion about compensating for expenditures on passenger transportation--mainly through enterprises and organizations--will not help the matter. There can be no doubt that transportation organizations will be less motivated to satisfy the needs of the population for transportation services. For the demand for services that are free of charge is increasing, and the increased volume of transportation services bring about additional expenditures that are also undesirable for the transportation workers. Moreover, relieving the population of a considerable part of the transportation expenditures will lead to an increased demand for other consumer goods and services, which are not being fully satisfied even now.

Perhaps Yu. N. Lachinov will then suggest relieving our country's population of the responsibility of paying for dwelling space? For payment for dwelling space here is less than the expenditures, and the labor activity of the country's population also depends on its availability. Let us transfer these expenditures to the enterprises as well. Why be cheap about this!

But this is a utopia!

As an economist Yu. N. Lachinov should have said that in order to solve the aforementioned problems the payment for passenger transportation (and not only this) should be brought in line with the expenditures on it as is required by the law of value. Commodity and monetary relations in our country are lagging behind the times and in the near future one can predict that they will die out.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11/72

000/ 1820/168

LOCAL, CENTRAL PLANNING BODIES NEED TO COORDINATE EFFORTS

Novosibirsk *EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA* in Russian No 6, Jun 83 (signed to press 29 April 1983) pp 140-141

[Response to article by R. I. Sniper, "Planning in the Region: Contours of the Future," *EKO*, 1981, No 12, by L. M. Meyerovich, deputy chief of the Planning and Economics Administration of the USSR Ministry of Light and the Food Industry, candidate of economic sciences (Moscow): "The Branch and the Territory: Mutually Augmenting One Another"]

[Text] We planners of the ministries perform a large amount of calculation work for the republics and regions but, unfortunately, these multivolume works remain unused. I completely share the author's opinion that the branch plans for development are poorly coordinated with the plans of the republic, oblast and region. The method of coordinating branch plans for economic and social development with plans of the regions which now exists is extremely cumbersome and not very effective. Briefly, it amounts to the following.

When the ministries send drafts of plans to the USSR Gosplan, at the same time they send to the republics drafts of plans for the enterprises and organizations located in the republic. The USSR Gosplan, which is oriented toward the need for products of a given branch, the availability of material and technical resources and so forth, in conjunction with the ministries, makes changes and refinements in the drafts of the plan for the branch. The republics send their remarks to the ministries and the USSR Gosplan (as a rule, insisting on increasing volumes) when the refined drafts of the plans have already been prepared by the USSR Gosplan and submitted to the directive agencies for approval. The remarks of the regional planning agencies thus are not taken into account since there simply is not enough time for this.

It would be better if the local planning agencies would begin to send their proposals for the development of enterprises to the ministries before the latter submit the draft to the USSR Gosplan. The planning agencies of the ministry when developing the draft of the plan would have the opportunity to take into account the suggestions of the local agencies. The process of defending the plan in the USSR Gosplan would be better and more substantiated. The USSR Gosplan would also have the opportunity to take into account the opinions and needs of the local agencies when forming the draft of the plan for the branch.

I should like to draw attention to manifestations of exclusively local interests when plans for expansion and reconstruction of existing enterprises and construction of new ones are coordinated. Unfortunately, one frequently encounters the desire "to attach" to the plan as many general urban utilities as possible which the city or rayon needs.

There is no doubt that the city should be well arranged and it is necessary to develop running water, sewerage, and trolley and streetcar lines, but this should be done on a planned basis, with specially allotted funds, and not by taking advantage of the "veto" right. Artificial inclusion of expenditures on these facilities in areas not envisioned by the state--in the estimates of expenditures on renovation or construction of enterprises--will lead only to an unnecessary overstrain and complication of the matter.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

INDUSTRIALIZED COUNTRIES' TECHNOLOGICAL PROGRESS, RAW MATERIALS CONSUMPTION

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian
No 6, Jun 83 (signed to press 29 April 1983) pp 159-165

[Review by V. Yu. Suchkov (Novosibirsk) of the books "Materialoyemkost' proizvodstva i struktura material'nykh zatrat" [Material-Intensiveness of Production and the Structure of Material Expenditures], by Grigor'yev, A. D., Nikonova, I. I. and Polyakov, V. I., Moscow, "Nauka", 1981, and "Intensifikatsiya proizvodstva i struktura ekonomiki v kapitalicheskikh stranakh" [Intensification of Production and the Structure of the Economy in Capitalist Countries], by Nochevkina, L. P., Moscow, "Nauka", 1982]

[Text] Economists are fairly unanimous in the opinion that saving on raw and processed materials and reducing the material-intensiveness of products constitute an effective direction for the development of production. But the very concept of material-intensiveness and the evaluation of its level and dynamics are presented by specialists differently, and sometimes even contradictorily. The authors of the books "Material-Intensiveness of Production and the Structure of Material Expenditures" and "Intensification of Production and the Structure of the Economy in Capitalist Countries" have made their contribution to the discussion.

The indicator of material-intensiveness has an apparently simple and obvious meaning: this is the ratio between the mass of expended raw and processed materials and the quantity of products obtained. The simplicity here, unfortunately, is more apparent than real. Instead of a unified coefficient of material-intensiveness one acquires a multiple indicator--in terms of the number of varieties of consumed raw and processed materials. As the authors of the book "Material-Intensiveness of Production and the Structure of Material Expenditures" note, material-intensiveness is a vectorial indicator. This multiplicity frequently gives rise to indefinite conclusions about the nature of the existing tendency: for partial coefficients can change (and usually do change) in various directions.

The differences in the dynamics of particular indicators of material-intensiveness has a profound economic significance: the technological process gives rise to progress in the branch and product structure of the economy, and provides for saving on certain production resources as a result of accelerated growth of

consumption of others. The classical example is the increased electricity-intensiveness of products of individual branches and of all of public production (see Table 1).

Table 1. Energy- and Electricity-Intensiveness of Products in U.S., FRG and Japan*

		1950	1978
U.S.	Primary energy resources	2.42	2.12
	Electric energy	0.81	1.84
FRG	Primary energy resources	2.21	1.65
	Electric energy	0.84	1.54
Japan	Primary energy resources	1.25	1.50
	Electric energy	0.46	0.63

*Proportional consumption of primary energy resources in tons of conventional fuel per 1,000 dollars of gross domestic product (electric energy--in kilowatt-hours per 1 dollar); electricity-intensiveness in Japan in kilowatt-hours per 1,000 yen of final output.

As one can see, the increased electricity-intensiveness of the final product involves an appreciable savings on the primary energy bearers. This is not a simple coincidence, but a cause and effect connection: the utilization of fuel in large-scale energy engineering with a higher efficiency factor makes it possible to reduce the consumption of fuel by less efficient small electric power stations and heat generating installations. The prospects for economizing on fuel and energy resources thus lie not in rejecting electricity-intensive technologies, but, on the contrary, in their rapid dissemination as consumers of energy in its most effective and mobile form.

Therefore one should not expect stereotypical behavior of the indicators of material-intensiveness in physical terms: the various directions of their change are a manifestation of technological progress and, perhaps, even an indicator of the speed of technological advancement. A reduction of the proportional expenditures of live and embodied labor, including raw and processed materials, corresponds to the idea of intensification of the economy. Economizing on traditional primary resources--ferrous metals and fuel, timber and cement--is achieved through more thorough processing of raw material and increased output of the final product, and also as a result of the replacement of customary materials with new ones. Processes of intensification are, consequently, characterized not only by a reduction of the material-intensiveness of products of public production, but also, simultaneously, by an increase in the indicators of proportional consumption of the progressive means of production: aluminum, paper, plastics and synthetic fibers, high-quality grades of rolled metal and, of course, electric energy.

Therefore the question of constructing a single generalizing indicator of the material-intensiveness for an individual branch of production and the national economy as a whole remains open. It seems at first that nothing could be simpler: statistics provide the fund for reimbursement of expended production capital in monetary terms as part of the gross national product (GNP). The proportion of the reimbursement fund in the GNP is frequently interpreted in economic literature as a generalizing indicator of material-intensiveness (see Table 2).

Table 2. Generalizing Indicator of Material-Intensiveness in U.S. National Economy, %*

Years	In terms of conventional	
	In terms of gross output	net output
1947	48.0	40.1
1958	48.3	41.2
1975	48.7	41.9

* According to data of interbranch balances in 1958 prices.

But still this indicator, with all its deceptive simplicity, does not exhaust the problem. It is not only that the fund for reimbursement of production capital takes into account expenditures of fixed capital (fixed production capital) in addition to raw and processed materials: wear and removal of machines and equipment, buildings and structures. Paradoxical as it may be, the dynamics of the proportion of the reimbursement fund in the GNP not only does not correspond to the actual tendencies in material consumption, but sometimes directly contradicts them. The basic reason for the "strange" behavior of the generalizing indicator lies in the very source of economizing on raw and processed materials--technological progress. Specialization of production and expansion of cooperation inevitably lead to increased intra- and interbranch circulation and, consequently, to a multiplication of repeated accounting for expenditures. In other words, those very processes which provide for a reduction of material expenditures lead to a systematic exaggeration of them in statistics.

The authors of the first book note that specialization of production in U.S. industry, for example, was reflected in the increased intrabranh circulation. By increasing intra- and interbranch flows, specialization is objectively reflected in the increased proportion of material expenditures. This is related not only to the increased costs of raw materials, processed materials and batching items, but also to the expansion of their circulation in public production.

Therefore attention should be given to the attempt of the authors of the book "Material-Intensiveness . . ." to free themselves of the shortcomings of the gross indicator of expenditures of raw and processed materials, turning to statistics of the conventional net output (see Table 2). Without becoming engulfed in methodological details, let us note that this approach is intended

to eliminate the effect of repeated accounting and make it possible to analyze the dynamics of relative material expenditures in terms of their content. In fact, if material expenditures in the U.S. economy in the gross calculation amounted to 765 billion dollars (1975), when calculated in terms of the conventional net output they were less than half as much (337 billion), which is explained quite obviously by the limitation of repeated accounting.

The problem, however, lies not so much in making the absolute values of the generalizing indicator of material-intensiveness more precise as it does in making its dynamics correspond to the real tendencies in material consumption. As for the nature of the changes in material-intensiveness according to the two methods, as one can see from Table 2 they move practically in parallel. One must therefore share the doubts expressed by L. P. Nochevkina concerning the proposed recalculation. It can be applied either at the level of the branch or when there are permanent branch boundaries, which is hardly the case in a dynamic economic system.

L. P. Nochevkina in her book turns to accounting in monetary terms for those kinds of raw and processed materials which first became part of industrial consumption at the level of the national economy. This indicator of material-intensiveness behaves more in keeping with reality: the ratio between expenditures on primary material resources and the final product of Japan (in constant prices) decreased from 0.316 in 1954 to 0.296 in 1960 and 0.188 in 1968. While in 1950 in the United States for each dollar of gross national product (in 1952 prices) they spent 0.113 dollars' worth of primary raw and processed materials, in 1960 this figure was 0.085, and in 1970 and 1973--0.067 dollars. The material-intensiveness of the product thus decreased essentially during 20 years. The absolute level of material-intensiveness in the United States is much less than in Japan, which is apparently explained by the higher development in the American economy of the sphere of nonmaterial production, and within the sphere of material production--nonmaterial branches.

It seems that the merit of the books lies not in the construction of one original indicator or another or the application of a more or less questionable methodology. The authors offer a detailed and systematic analysis of the real processes of structural and technological progress in the base branches of the economies of capitalist countries. The analysis, which reveals the typical trends and tendencies in material consumption and the dynamics of material expenditures, makes it possible to reveal not only their national peculiarities, but also the general features and patterns that are inherent in the modern stage of development of productive forces.

For example, the dynamics of the metal-intensiveness of the growth product in the United States, the FRG and Japan appear to be essentially different at first glance. While in the United States and the FRG metal-saving processes proceed monotonously, in Japan the tendency toward reducing the consumption of metals was not observed until the 1970's.

Behind the difference, however, one sees something in common. the improvement of the quality and the expansion of the assortment of rolled steel and the improvement of the technologies for metal processing; finally, there is an

increasingly noticeable replacement of steel with light metals and plastics. The authors quite justifiably explain the fact that until recently the proportional consumption of ferrous metals has increased in the Japanese economy by the delay in the completion of all-around industrialization of production in this country. Accelerating economic growth and still not having a sufficiently diversified heavy industry during the postwar period, Japan was forced to develop the base branches of industry at increased rates. Therefore the role of ferrous metals in the Japanese processing industry--the main sphere of their consumption--increased regularly.

In the structure of products from ferrous metallurgy there are marked changes in favor of high-quality metal, precision rolled metal and other precision semimanufactured products. The so-called "fourth" metallurgical section is taking on more and more operations for processing metal (thermal processing, the application of coatings, the refinements of billets to sizes for prepared parts, the manufacture of molded profiles and so forth) which were previously handled by machine building and metal processing. This contributes to making the product less expensive since the production is concentrated at specialized metallurgical enterprises, this leads to a reduction of wastes, and it makes it possible to economize on costly materials.

In ferrous metallurgy products there is an increased proportion of rolled sheet metal, from which a large part of metal industrial items are manufactured using highly productive methods of stamping, bending and automated welding. By the middle of the 1970's the proportion of sheet metal and strips of metal in the prepared rolled metal reached 52 percent in the FRG, 62 percent in Japan and 68 percent in the United States, and the proportions of high-quality cold rolled sheet metal were 23, 19 and 25 percent, respectively.

Another example of the large technical advancements in ferrous metallurgy is the replacement of Marten furnaces with oxygen convertors. Their main advantages over Marten furnaces are a 2-6-fold increase in output and a 40-percent reduction of production space; they expend less energy and oxygen. Oxygen convertors of the second generation with bottom blasting also reduce the time of smelting by 10 percent, make it possible to obtain 40 percent more metal with an equal volume, and save from 8 to 20 percent of the capital expenditures. In the FRG in 1978 74 percent of all the steel was smelted in oxygen convertors, and 13 percent in electric furnaces and Marten furnaces; in Japan these figures were 80.6, 19 and 0.7 percent, respectively. American ferrous metallurgy, setting renovation aside, produced only 61 percent of the steel with oxygen convertor technology, and 16 percent was still produced with Marten furnace technology.

The reduction of the metal-intensiveness, and subsequently the metal-intensiveness of the products is least of all the result of the dissemination of progressive technologies for metal processing. The output of machines and equipment whose utilization provides for a reduction of losses of metal is increasing rapidly. A larger role is being played by "progressive" metal cutting machine tools (grinding, gear processing, boring, broaching, and automated machines with program control), and there is an appreciable reduction of the production of lathe, planers and so forth, whose application involves considerable wastes

of metal. The operations for cutting metals are being replaced by methods of processing with pressure because of the increased proportion of forging and pressing equipment in the stock of metal processing equipment.

The large technological advancements have been possible because of the rapid progress of machine building. Thus the proportion of machine building in the gross product in Japan increased from 4.1 percent in 1955 to 21.4 percent in 1975. One should apparently regard this tendency as an overall pattern in the development of the modern industrial economy and a prerequisite for material-saving processes and intensification of production.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

BOOK ON PROBLEMS OF WESTERN MANAGEMENT CRITICIZED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 6, Jun 83 (signed to press 29 April 1983) pp 165-172

[Review by Yu. P. Voronov, candidate of economic sciences, Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences (Novosibirsk) of the book "Protivorechiya i problemy effektivnosti upravleniya kapitalisticheskim proizvodstvom" [Contradictions and Problems of the Effectiveness of Control of Capitalist Production], ed. by N. A. Klimov, doctor of economic sciences, Moscow, "Nauka", 1981, 383 pages/

[Text] At first glance the book seems to be simply poorly edited. The authors kindly use the English original terms from time to time. This partially facilitates understanding.

Many of the terms have not been translated, but explained with their own words. Thus "liason man"[sic] is rendered as "a special worker for arranging communications," but it remains a mystery whether they mean a telephone operator or a bureaucrat with special instructions. A "project planner" is described as a "higher manager, responsible for coordination as a whole," but the book does not distinguish between "coordination as a whole" and any other coordination. "Growth-functional team" is defined as a "temporary brigade for unifying and coordinating functional activity"; "span of control" is defined as "the indicator of the number of subordinates of one manager." The discussion might be about something interesting, but regardless of what you read into it nothing can be understood. "Profit center" is translated on page 190 as the "center of profit" and on page 354 as "an enterprise (subdivision) operating with an independent balance" . . .

Let us assume that a short time before reading the book I happened to find out from someone what it was about. Then there would be the feeling that instead of an interesting film I was shown the credits and then asked to leave the theater . . .

Let us take these same "centers of profit," which end up at the end of the book on an independent balance. What are they talking about? Certainly not about trifles. In past years, here, there and everywhere one hears scraps of information about an interesting phenomenon in intrafirm planning abroad. The

management of a large company can determine clearly and in a differentiated way the goals of its divisions for the planning period: you will be primarily in charge of quality with minimum assignments for financial indicators, your main task is complete replacement of the equipment by the end of the time period, and yours is to forget about everything else and increase profit at any cost. And the division of the firm that has been given the last task is called the "center," which means the "source of profit."

But what criteria and methods are used to differentiate the goals: it is impossible to learn about this most interesting and undoubtedly useful phenomenon in the book under review.

If one can somehow understand something about the "center of profit", it is impossible even to guess the goal that is set for the "discretion center of expenditures." It exists in the text as a lonely linguistic riddle that does not pertain to anything. Along with this the authors have managed to give the reader a somewhat simpler riddle, as it were, for limbering up.

Not everyone, but many who have read attentively will be able to guess that the "council of the president" is not a paternal recommendation, but a group of advisors, and that in "market segmentation" they divide up the market, and so forth. The overall picture of terminological slovenliness is augmented by grammatical mistakes like "discriptive" instead of "descriptive," which can be found throughout the entire text. They are repeated with such stubbornness that the patient reader might take them for neologisms.

If it were only a matter of the quality of translation or editing it would be better not to draw attention to the book under review. There are a lot of books like that and we are not responsible for them.

The problems and contradictions here are more profound and significant.

The Lack of a Particular Audience

One encounters at every step the critical need to elucidate foreign experience in the organization and control of production. A single periodical cannot satisfy this need. In this respect even EKO is no exception. This need is too great for an individual magazine or an individual book. This is precisely why it is important for every shot to hit its mark, for every publication to find its contingent of readers.

And books of the recent past have inspired hope that this would finally be the case. The works of D. M. Gvishiana, Yu. P. Vasil'yev, O. N. Pashkevich and Yu. A. Ushanov, and collections of works on intrafirm planning and state scientific and technical programs have demonstrated the scientists' understanding of the needs for ideological work and economic practice. The book under review is a signal that warns that these hopes were premature, that it is quite possible to have publications that are of no advantage whatsoever. This is not a matter of wasting paper or overloading printing equipment. The printing of a book with 20 printer's sheets and 1,900 copies would probably go unnoticed in the economy of our mighty country. But why is it needed, what is the point of this publication?

There were times when the articles and books by Yu. P. Vasil'yev and collections of works on foreign administrative experience that were organized and edited by him were popular among engineers, economists and business executives. It was simple to explain their popularity: the collective headed by Yu. P. Vasil'yev had permanent and close connections with the AvtoZIL association. During the course of these contacts and concrete work on orders of the association it became understandable what needed to be translated and written. The study of foreign experience acquired reference points and intelligibility, and could not deliberately stand in contradiction to the needs of practice.

Let us note that in spite of the rules that have been adopted, the annotation of the book under review does not indicate for whom it is intended. And this is instructive.

Fresh winds are blowing in domestic book publication. Some of the scientific literature is now printed on order. This is correct. Why print a large edition of something that not everyone needs? But any general idea is true only in principle. Say the book under review appeared on a list of orders. The title is such that not everyone will rush for it, but still somebody will order it. And nothing more is necessary for the success of research work or the maintenance of a favorable situation.

The authors set for themselves a goal: "To concisely generalize the preceding experience in capitalist control of production from the standpoint of its effectiveness; from this viewpoint to consider and evaluate its latest peculiarity that have been originated by the scientific and technical revolution and the subsequent serious deepening of the crisis of state monopolistic management" (p 5). The problem is serious and broad in scope, and one could approve of the intention of the authors were it not for the suspicious uniqueness of individual formulations. Let us take the finale: "The crisis of state monopolistic management." The reader has a right to expect that he will find a clarification of the relationship between the "crisis of state monopolistic management" and the "crisis of state monopolistic capitalism" which is discussed in all of the textbooks.

But one of the distinguishing features of the book under review is that it in no way relates the new to what is already widely known. The presentation of the judgments of foreign authors turns out to be independent. It is difficult to accept because the borrowed terms do not correspond to those used in domestic literature.

Thus having read in the quotation cited above "administration of production," the writer has the right to think that this is about administration of production within the enterprise. But gradually (how quickly depends on the individual capabilities, since the necessary explanation is not given) it becomes clear that the term "administration of production" means something entirely different, and namely the activity of the management of the capitalist firm, and not only the internal administrative, but also the external management, particularly interaction with the state apparatus and other firms.

It has turned out that the person who assigns to the administration of production the traditional, generally accepted meaning is deceived. He is reading about something else.

What Is Administration And Its Theory?

The book under review has more than 60 footnotes, which amounts to one and a half footnotes for every page. This is quite appropriate. Mainly these are references to foreign journals and monographs on administration. One notices that the authors are swimming in a sea of information. Because they have nowhere to swim to; as was said above, it is not clear for whom the book under review has been written. But perhaps the authors have independent research tasks?

The book begins with a modest disclaimer: "The authors have tried to follow the well-known Leninist instruction to the effect that it is important not to get lost in the zigzags and winding paths of history" (p 5). Now do you understand what is bothering the collective of authors? We are bothering them with trifles in the desire to bring advantage to specific associations and enterprises. It is not on that scale!

Alas, further reading of the book convinces us that there is an abyss between the broadly promising declaration and the actual level of analysis of processes.

Here, for example, is how administration is defined. In the opinion of the authors, it "is a deliberate, purposive activity for improving organization directed toward combination of the composition and interaction, optimization of the ratio of production components, taking into account their development and changes" (p 11).

The person who thinks that there is nothing to add to this definition will be mistaken. Here is the addition that is made right below it: "The most important feature of administration understood this way, administration in the strict sense of the word, is the primary orientation toward the totality of perception and the transformation of the system of production, toward accounting for the whole, which is not the simple sum of its particular properties, but is always more than this sum."

Now it would seem that there is nothing to add. But the reader who has still not lost his enthusiasm can be advised, pencil in hand, to figure out which sum is more than which.

Attention is drawn to how rapidly and unreservedly foreign specialists are given the title "theoreticians." It is enough to be a nontenured instructor at some South Carolina university or a clerk in a bank in St. Louis and to write one or two articles about secondary problems of administration in order to be recognized and for people to begin to argue with you as a bearer of "bourgeois theory of administration."

What did the authors promise at the very beginning of the book? "Not to get lost in the zigzags and winding paths of history." The matter did not get as far as zigzags and winding paths; the loss of the latter elements of content took place between U. Makhler and Dzh. Odiorn on p 279. The reader who has fought his way to this page risks his sanity if he persists in his desire to understand what distinguishes the "polar points of view" of Makhler and Odiorn, or even where they disagree.

The constant, unrelenting refrain that does not leave the pages of the book are the words "bourgeois theory of administration." But there is not a word about what it consists of. Nothing unusual has been demanded of the authors of the book. Classifications of scientific schools in bourgeois political economics and sociology are well known and have become customary. Preceding works on administration have given certain classifications of bourgeois schools in the sphere of organization and administration of production. What enables them to ignore existing experience? Always the same thing--a lack of contact with practice, the needs of economic construction.

The Approach To Imperialism As An Artificial Formation

Certain ideas expressed in the book are so unusual that they turn known socio-economic phenomena upside down. Everyone knows that in a certain stage of the development of the capitalist method of production there is a stage of imperialism. The arrival of this stage is dictated by the objective laws of development of capitalism, its productive forces and its production relations. To an equal degree individual aspects of imperialism exist because of the inevitable historical law. There is no freedom of choice here. Since imperialism is, in particular, state monopolistic capitalism, the alliance of monopolies and the state reflect the objective course of history. But here is what we read on p 34 of the book under review: As experience shows, no great effectiveness exists in such an area of administration as the present alliance of corporations and the state, which includes state agencies, the largest commercial banks, monopolies of the military-industrial complex and international monopolies that operate within the framework of the combined, 'coordinated' economy. The fact is that there is actually no real coordination, and the relations among the partners are far from being the same." We shall not draw attention to the fact that the sameness of the interrelations among all partners on earth is an impossible ideal, that the "union . . . which includes state agencies" is too arbitrary an interpretation of the generally accepted concept of the merging of the state and the monopolies. But in what sense is the effectiveness of this merging not great? Perhaps in comparison to premonopolistic capitalism?

Special notice should be given to the practice of quoting. Quotations, as a rule, are used for argumentation! Is it necessary for the statement on some page of the book to be convincing? Why analyze the statistics and the actual state of affairs! Here are quotations from A. Sloan who headed General Motors for many years, K. Brevord, the dean of the higher school of administration in the city of Delphita, from the "West German theoretician" W. Haller, the "American specialists" S. Davis and R. Lawrence or the wholesale "'founders' of the implementation of the system approach in administration," C. Barnard, A. Johnson, F. Kast and D. Rozenzweig. These "founders" who are mentioned on

is 58 are given no more space on the subsequent pages. And each time it goes without saying that the reader must unquestioningly believe these deans, former presidents, theoreticians and founders. And if he does not believe them it is his own fault.

But the ideas about some abstract and absolute effectiveness of administration are not individual blunders or oversights. The position of the book's editor, Doctor of Economic Sciences, B. A. Klimov is quite clear in the concluding phrases of the first chapter, which he wrote. Let us turn to p. 76: "The development of administration of production under capitalism within the framework of retaining private property is a kind of asymptotic process: movement without any hope of finalization." Ideas about a system of administration which will be effective once and for all are hopelessly far from reality.

Why Is Foreign Experience Needed

Let us raise the question clearly: what do we need from foreign experience in the administration of capitalist enterprises?

Institutions in political economy and other social sciences need a profound and well argued criticism of modern theories of administration with a presentation of their essence. Business executives need information about the latest technological innovations with a description of concrete examples from practice. Both are interested in information about tendencies and progress in the administration of production.

There is nothing of the kind in the book under review. In its criticism of some unorthodox "bourgeois theory of administration" alternates with ingratiating quotations.

What is tragic is not the publication of a single unsuccessful book, but the fact that the aforementioned demands are not being satisfied and it is not known whether they will be satisfied in the near future. The study of foreign capitalistic and administrative experience is extremely decentralized. On the basis of the personal interests of individual researchers and managers, it is randomly and chaotically spread over a multitude of organizations.

It seems that this is precisely the reason for the appearance of such books.

In conclusion I should like to take note of the fact that a review of the book we have discussed has already appeared in the first issue for this year of the magazine *MIRNAYA IZNAENIYA I MEZHOTRASNOYE SOTRUDENIYE*. The reviewer, L. Tsvetkov, notes that the book is of a "generalizing nature, combining a valid scientific and economic approach to the disclosure of the general tendencies in the development of capitalist administration with an analysis of the actual administrative practice in its diversity" (p. 148), that it "successfully carries out the main task and gives an evaluation of the latest peculiarities in the techniques of capitalist administration which has been engendered by the scientific and technical revolution and the subsequent serious deepening of the needs of state monopolistic management" (p. 149).

The style of the review is identical to the style of the book and one might hope that what we have presented above "has successfully fulfilled the main task and given an evaluation of the latest peculiarities" of this style of work.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

DAILY ALLOCATIONS OF WORKTIME URGED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian
No 6, Jun 83 (signed to press 29 April 1983) pp 173-177

[Article by V. V. Fedotov (Leningrad): "Not a Day Without a Plan!"]

[Text] The numerous investigations of the labor of various specialists has still not produced a full answer to the question: What nevertheless impedes many people from correctly organizing their labor?

An analysis of the conditions that have an unfavorable influence on the organization of the labor of any specialist answers this question simply: Complete disdain for questions of personal planning.

The absence of plans for personal work is fraught with the fact that current affairs are pushed into the background by more important and therefore more labor-intensive ones. Naturally, this causes a failure to meet work deadlines, and some people simply do not have enough time at all. As a result there is no time to increase special knowledge, to satisfy spiritual interests, there is no time for recreation, and their health begins to fail . . . confusion in planning personal affairs is explained most frequently by a lack of knowledge of planning techniques. This frequently means a simple recording of current affairs for the next day. When drawing up personal plans the majority of us, as a rule, are limited at best to an attempt to objectively evaluate the volume of forthcoming work without analyzing the time budget. The forms of the documents for planning are selected arbitrarily, according to one's own taste, without taking into account the working conditions.

If one is to take the planning of personal work seriously, it is necessary to adhere to the following sequence:

determination of time expenditures for permanent business (analysis of the time budget);

analysis of the content of the planned business and a determination of the time necessary to carry it out;

a comparison of time expenditures on the planned business and the personal time budget;

the drawing up of the long-range plan;

the drawing up of the plan-schedule;

the recording of current affairs and the drawing up of the plan of the working day.

As we can see, everything begins with an analysis of the personal time budget, that is, a determination of the time expenditures on business, the list and time periods for whose fulfillment does not depend on the individual (let us arbitrarily call them "permanent business"). There is a multitude of recommendations of how to register with maximum precision the data of daily time expenditures. They are all bad for personal planning. One can be quite confident that few will have enough patience to scrupulously record their every step over a long period of time. Moreover, there is no particular need for this.

In order to gain a real picture of time expenditures on permanent business, one should attempt to analyze several working days. Try to take into account all time expenditures without exception if they are daily affairs which regularly arise throughout a particular period. The final result of your analysis should be general data on time expenditures on all permanent affairs and their approximate distribution among the days of the week and month.

Having data about the time budget, it is already possible to begin to analyze the planned activity. One should begin with a determination of what needs to be done. This is quite necessary since after determining the goal of any activity one can get an idea of its content. The latter will be a list of planned business distributed among time periods and in the sequence in which it must be done. The main requirement for this list is its completeness. One should pay attention to everything that can be taken into account and foreseen.

A practical device which can be recommended is to divide each planned job into elements: the more detailed this is the easier it is to imagine the time expenditures on the fulfillment of each job. Practice shows that regardless of how complicated and new a job may be, with the corresponding efforts it is always possible to envision the amount of time required to provide for the possibility of carrying it out.

After the time budget has been determined and the expenditures of time on the planned business have been refined, it is necessary to compare these data. First one evaluates their total interrelation. It can immediately reveal a lack of correspondence between the volume of planned business and the actual possibilities of carrying it out. It is clear that if they do not coincide there arises of its own accord the question of revising the list of planned business. But if they coincide to one another, this comparison can be continued for verification and one can find out how realistically the time necessary for the work has been allotted during one concrete period or another. In the final analysis we obtain a refined list of planned affairs and a number of practical considerations regarding the sequence of carrying them out. The auxiliary work ends here.

Let us turn to the planning itself: on the basis of the existing data concerning the list of business, its nature and labor-intensiveness, one draws up a long-range plan for a more or less lengthy period. It is most convenient to use a form of a schedule which makes it possible to distribute all work most expediently, taking into account the time periods for carrying it out, the sequence and the interdependency. A systematized list of the business and work which have concrete deadlines will be a supplement to the written long-range plan.

The preparation of the long-range plan is still not the end of the job. In order to changeover to concrete working plans for each day, it is necessary to decide how most expediently to arrange the work: what time are you able to allot for one job or another, in what combination should they be carried out, how should time be distributed within the working day. Let us imagine this graphically, having constructed a kind of model of one or another recurring period of the week or month. On the schedule let us call it the "plan-schedule of the week (month)." There should be a particular place for everything of which personal work is comprised, including permanent and planned business. The standard plan-schedule is the basis for regulating personal work. Its observance provides for planned work, completeness, and an intelligent combination of work and recreation. The long-range plan and the plan-schedule of the working week in and of themselves do not solve the practical problems of planning. It is still necessary to take into account current affairs and the planning of each individual day, which are not all alike in spite of any regulation.

First of all about the forms for recording current affairs. This question, at first glance, might seem inessential. In practice, however, the form for recording current affairs largely determines the efficiency of planning. Each of the multitude of existing forms has advantages and shortcomings. It is important to select one that corresponds most to the conditions of your work. Thus the traditional loose-leaf calendar is suitable only for registering those jobs which are to be carried out by a particular deadline.

And where do you enter affairs that do not have a concrete deadline? The most convenient for these entries are forms of a weekly calendar. Each job is entered into the block of hours that corresponds to the time period for its fulfillment. But even on this form there is no place for entering jobs that do not have a concrete deadline. In addition to the usual notebooks and notepads, where they are entered without any system, one can recommend a special form which is a large sheet of paper that is divided up according to the main areas of work. Entries on the sheet are made with a pencil and erased when the jobs are carried out. This form gives a visual picture of all current affairs and it is easy to make a selection from it when drawing up the daily plan.

An extremely convenient form of recording current affairs is a planning card catalogue. A separate card is filled out for each job. For best visibility one can use cards of various colors, according to the nature of the planned affairs and the degree of urgency of their fulfillment. The distribution of the cards in the planning card catalogue can vary extremely: according to deadlines for fulfillment, according to areas and kinds of work, according to the sequence for fulfillment, and so forth. The planning card catalogue can be stored in the usual catalogue box or on a special shelf with cubbyholes. It

can also be kept in the pocket--in the form of a small booklet in which the cards are separated by dividers or are in individual pockets, like stamps in a stamp book. This is even more convenient since all of the cards are constantly in view.

The last element of the system of personal planning under consideration is drawing up the plan for the day. The selection is made from the long-range plan, the plan-schedule for the week and the entries of current affairs. The most convenient form of the work plan for the day is one which has a time chart and the jobs themselves are systematized.

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

GUIDE TO SELF-RATING AN ATTRIBUTE OF 'DECISIVENESS'

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian
No 6, Jun 83 (signed to press 29 April 1983) pp 187-189

[Article by V. Roshchakhovskiy, from topics of the Czechoslovakian magazine
A . . . Z MAGAZIN PRO KAZHDOGO: "Are You Decisive?"]

[Text] Each day every one of us makes certain decisions. Frequently these involve simple problems which are always arising in life and activity, but sometimes the decision involves many people. Sometimes we have only a few minutes to make a decision and sometimes the decision is preceded by hours or days of thought, indecision and also torment. All this pertains equally to job affairs and personal or family problems.

Not all of us approach decision-making in the same way. While some act without long consideration, as they say, jump the gun, others are guided by the rule "look before you leap." Which is better? Apparently there should be a "golden mean," but how does one find it?

And what can you say about yourself in this connection? Is decisiveness a strong aspect of your character? Are your decisions rash? Or, conversely, are you indecisive?

Perhaps our text will help you to find an answer to these questions.

Answer "yes" or "no" to the following questions.

1. At your old place of work can you easily adapt to new rules or a new style which is essentially different from the ones to which you are accustomed?
2. Do you adjust quickly in a new collective?
3. Are you capable of expressing your opinion publicly, even if you know that it contradicts the viewpoint of the higher manager?
4. If you are offered a job with a higher salary in another institution will you agree to transfer to the new job without wavering?
5. Are you inclined to deny your guilt when making a mistake and to look for an excuse that is suitable for the given case?

6. Do you usually give the real reasons for your refusal to do something, without concealing them with various "mitigating" and camouflaging reasons and circumstances?
7. Will you be able to change your former view on one subject or another as a result of a serious discussion?
8. You are reading someone's work (as part of your job or by request) whose idea is correct, but whose style of presentation you don't like--and you would have written it differently. Will you begin to correct the text and insistently suggest that it be changed to correspond to your opinion?
9. If you see in a store window something which you like very much, will you purchase it even if you do not really need this thing?
10. Can you change your decision under the influence of persuasions from a charming person?
11. Do you plan your vacation ahead of time without envisioning any "perhaps"?
12. Do you always keep your promises?

Determine the number of your points from the table.

Question	Yes	No
1	3	0
2	4	0
3	3	0
4	2	0
5	0	4
6	2	0
7	3	0
8	2	0
9	0	2
10	0	3
11	1	0
12	3	0

Now you can answer the question presented at the beginning.

From 0 to 9 points. You are very indecisive. Constantly and on any occasion you are tormented for a long time weighing all the "pros" and "cons." If you manage to transfer the decision-making to someone else's shoulders you breath a great sigh of relief. Before deciding on any step, you consult for a long time . . . and you frequently make a half-hearted decision. In meetings and conferences you prefer to remain silent, although in the lobby you acquire courage and eloquence. But do not try to justify all this as though it were your "inherent" circumspectness. No, most frequently this is cowardice. It

is difficult to live and work with you. And even if you have knowledge, erudition and experience, such a feature of character as indecisiveness greatly reduces your "efficiency factor." Moreover, it is difficult to rely on you for you can let people down. Of course it is not easy to reforge your character, but it is possible. Begin with small things, risk making a decision of your own accord--and it will not let you down.

From 10 to 18 points. You make decisions cautiously, but you do not run from serious problems which must be resolved immediately. You usually waver when you have plenty of time to make a decision. Then you begin to be overcome by various doubts, and there is the temptation to "settle" everything, to "coordinate" with the higher managers, although the problem is at your level. Rely more on your experience, it will prompt you to make the right decision. In the end consult with one of your colleagues or your subordinates not in order to protect yourself but in order to check yourself.

From 19 to 28 points. You are decisive enough. Your logic, the consistency with which you approach the study of a problem and, the main thing, your experience help you to solve problems quickly and for the most part correctly. There are individual blunders which you recognize and you take measures to eliminate them. While relying on yourself, you do not ignore the advice of others, although you do not turn to them very frequently. You defend the decisions you have made to the end, but if it turns out that they were mistaken, you do not stubbornly continue to defend the honor of the uniform. All this is good. But try always to be objective. Do not consider it a disgrace to consult on those problems in which you are not sufficiently competent.

Twenty-nine points and more. Indecisiveness is an unknown concept for you. You think you are competent in all aspects of your activity and you do not consider it necessary to explain your opinion to anyone. You understand one-man management as the right to make unilateral decisions, and critical remarks regarding them cause you irritation which you sometimes do not even try to cover up. You are impressed when people call you a decisive and willful person, although this will is not at all what you are accused of. In order to consolidate this opinion among those around you, you sometimes refute intelligent suggestions of others. You withstand mistakes painfully, profoundly believing that they are the fault of someone else and not you. Your belief in the infallibility of your opinions is a serious shortcoming. This character feature and this method of work suppresses the initiative of subordinates and their desire for independent actions. This instills indecisiveness in them, that very thing from which you run. All this does not lead to anything good, it causes serious harm to the psychological climate of the collective, and it impedes the work. No, you must immediately change your style of work!

COPYRIGHT: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1983.

11772

CSO: 1820/168

END

END OF

FICHE

DATE FILMED

19 OCT. 1983

